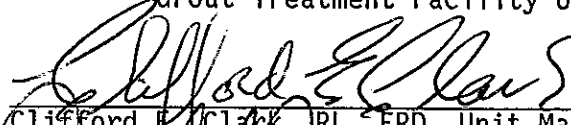

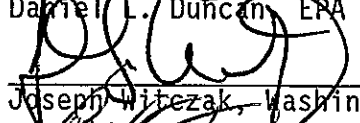



Final

## Meeting Minutes Transmittal/Approval

Unit Managers Meeting: Grout Treatment Facility  
Westinghouse Office, Lacey, Washington  
Meeting Held April 23, 1992

### Grout Treatment Facility Unit Managers' Approval

 Clifford E. Clark, RL, ERD, Unit Manager	Date: <u>5/28/92</u>
 Daniel L. Duncan, EPA Region 10, RCRA Program Manager	Date: <u>5/28/92</u>
 Joseph Witezak, Washington State Department of Ecology, Unit Manager	Date: <u>5/28/92</u>
 Ralph Wood, WHC, Contractor Representative	Date: <u>5/28/92</u>

#### PURPOSE:

Meeting Minutes are attached.

- Attachment 1 - Summary of Discussion and Commitments
- Attachment 2 - Attendance List
- Attachment 3 - Agenda
- Attachment 4 - Action Items List with Status
- Attachment 5 - Engineering Change Notice #114
- Attachment 6 - Engineering Change Notice #117
- Attachment 7 - Engineering Change Notice #118
- Attachment 8 - Engineering Change Notice #119
- Attachment 9 - Engineering Change Notice #120
- Attachment 10 - Engineering Change Notice #121
- Attachment 11 - Engineering Change Notice #122
- Attachment 12 - Technical Review of Draft Responses to Ecology's  
Comments on PNL Report 7644
- Attachment 13 - Federal Register, Land Disposal Restrictions for Newly  
Listed Wastes and Contaminated Debris; Proposed Rule



Attachment #1

Summary of Discussion and Commitments

Unit Managers Meeting: Grout Treatment Facility  
WHC Office, Lacey, Washington  
April 23, 1992

PREVIOUS MEETING MINUTES

The minutes for the February 1992 meeting were circulated for signoff.

PROGRAM STATUS

Status of Vault Construction

WHC (T. Staehr) gave the status of construction of the five vaults.

- Installed the vault cover panels.
- Poured a topping slab on the cover panels.
- Conducted an air leak test on the vaults. Readings of approximately 200 cubic feet per minute (CFM) leakage were taken, which was well within the acceptance criteria of 600 CFM.
- Installed central vault pits.
- Installed excess water pits at each corner of each vault.
- Began installing the asphalt diffusion barrier on the roof and along the sides.
- This phase of construction should be completed by the end of April 1992.
- Upcoming activities include installation of the piping on top of the vaults, the leachate pit, and electrical duct banks.

Engineering Change Notices (B-714-114, -117, -118, -119, -120, -121 & -122)

WHC (T. Staehr) distributed copies and led a discussion on the seven Engineering Change Notices (see Attachments 5 - 11).

- B-714-114 - Changed specific requirements for the transformers to make them consistent with the site and industry standard.
  - Revised the welding detail for the plugs placed on top of the risers during filling of the vaults.
  - Corrected a drawing error that shows the location of blackouts for the excess water pits.
- B-714-117 - Added a sealant for the end cover panels to facilitate the air test.
  - Clarified the specification for riser weldings.
- B-714-118 - Changed the drawings of the test stations for enclosure test systems to make them consistent for all four vaults.

- Changed the specification requirement to allow a substitution for a particular make of a concrete filler or surfacer for the inside of the pits.
  - Clarified the duration for the Hi-Pot test for testing the cable.
- B-714-119 - Revised the pit drain seals in the excess water pits to conform to the larger capacity and new pressure requirements for the exhauster.
- B-714-120 - Allowed the removal of the bar at the blockout at the excess water pits to accommodate installation of the cover panels.
- Clarified the spacing of the reinforcement steel at the central vault pit.
- B-714-121 - Added an optional splicing detail for the liner of the exterior drainage path near the vault cover blocks and the tops of the walls.
- Changed the placement of the HDPE boot over the conduit to the outside of the liner to facilitate welding.
- B-714-122 - Added several details to the supports for the piping on top of the vault roof, mostly allowing them to add shims to get the proper elevation.
- Corrected a drawing error showing the location of the pipe coordinates.

#### AIR TOPICS

Ecology (J. Willenberg) discussed the applicability of WAC 173-460. He made the following points:

- WAC 173-460 became effective on September 18, 1991, and covers toxic air emissions. Only new sources that start construction after that effective date are subject to the new regulations. Start of construction is defined as the date when pouring of concrete commences.
- Since construction of the Grout vaults began in Fall 1989, WAC 173-460 does not apply to these vaults. While only five vaults (including the PSW vault) are presently being built, there will eventually be a total of 44 vaults at the facility. All 44 vaults are considered as one construction project, since it is planned to have the same basic design and operation for these vaults.
- Ecology will consider certain vaults as new sources and thus subject to WAC 173-460 if either one of these occur:
  - Modifications made to the design and operation of the vaults so that emissions of any regulated air pollutant would increase significantly.

- A halt in construction activities that exceeds 18 months from the completion of one vault to the start of the next.

Ecology (J. Willenberg) stated that WAC 173-400 authorizes Ecology or the local air agency to require notice of construction application for those facilities that are explicitly listed. The Grout vaults project is not on the list and thus not subject to WAC 173-400.

Ecology (J. Willenberg) stated that PSD regulations apply to facilities with over 100 tons of toxic organic emissions a year. The Grout facility plans to have 30 tons of such emissions a year, so PSD regulations do not apply.

DOH (J. Blackwell) mentioned that he can provide RL/WHC with guidance documents on draft Department of Health regulations dealing with issues on facility modifications.

## RCRA TOPICS

### Vault 103 Hydrotest

WHC (M. Cline) reported that RL/WHC is in the process of reviewing Ecology's comments to a DOE-RL letter on Vault 103 hydrotesting, and will prepare a formal response.

### Hydrogen Issues

Ecology (J. Witczak) distributed copies of Brown and Caldwell's draft responses to Ecology's comments on the PNL Report 7644 (see Attachment 12). It was agreed to revise the 12-11-91:1 Action Item as follows:

Action Item: RL/WHC will contact Ecology within a week to arrange a meeting to discuss Brown and Caldwell's comments to Ecology's comments on the PNL Report 7644. Action: R. Wood (WHC)

### NODS

Ecology (J. Witczak) noted that the NOD comment on the tritium issue has been resolved between Ecology and the Washington Department of Health and therefore can be closed on NOD table.

### RCRA Permit Application Status

WHC (M. Cline) stated that RL/WHC recently sent a letter to Ecology and EPA regarding the RCRA permit application status. WHC provided Ecology and EPA with advance copies of the letter, which describes various unresolved RCRA issues for Grout and HWVP, and states that RL/WHC does not plan to submit a revised permit application. WHC (M. Cline) said that the letter was part of a submittal package that also includes copies of the Grout Verification Plan and the Grout Sampling Plan. At present RL/WHC does not intend to incorporate these two plans into the Grout permit application.

RL (C. Clark) indicated that RL/WHC does not plan to submit a revised permit application that contains unresolved issues, since the application will have to be revised once these issues are resolved. Ecology inquired as to the specific unresolved issues which might hold up resubmittal of the application. RL/WHC did not identify any specific issues. Ecology (J. Witczak) stated that without knowing which issues are in question, he will not support RL's stance, and that a revised Grout permit application should be submitted.

#### Discussion on the December 1991 Monthly Status Report

In response to Ecology's inquiry, WHC (G. Williamson) reported that the pilot plant pour was conducted the previous week. WHC is waiting for the vessel to cure before samples can be tapped. A report should be ready sometime this summer (1992). The pouring activities did not include the multiple valve testing, which would determine the best valving arrangement for pouring grout. WHC is hoping to conduct the testing eventually, although it depends on the availability of funds.

#### Discussion on the January 1992 Monthly Status Report

In response to queries by Ecology, it was agreed that issues on hydrogen mitigation equipment would be addressed in the upcoming meeting between Ecology and RL/WHC regarding PNL Report 7644.

WHC (G. Williamson) reported that core drilling was recently completed, and that the samples are in the process of being analyzed for compressive strength and leachability.

WHC (R. Wood) stated that he can provide Ecology with the permit application schedule if requested.

Ecology (M. Jaraysi) will meet with WHC (R. Wood) to discuss the structural problems of the dry well at the facility. The well is located in the eyewash station and has air-compressor condensate draining into it.

#### Discussion on the Tank Integrity Assessment

WHC (R. Wood) stated that the final report has been issued for the tank integrity assessment, and that the independent Professional Engineer (PE) had several recommendations. WHC (R. Wood) said that problems exist with the isolation valve in the excess water pit. Once these problems are resolved, RL/WHC will issue an SD document and will include the PE's report as an attachment.

#### Discussion on Design/Construction of the Next Four Vaults

WHC (T. Staehr) stated that Wally Rutherford will be the WHC project engineer for the next four vaults.

WHC (G. Williamson) reported that the bidding process began for the first part of the contract, which deals with excavation and placement of the bottom barrier. The second part of the contract deals with the

### Action Items

- ### Schedule of Next Meeting

The next meeting was scheduled for Thursday, May 28, 1992, at the Ecology office in Kennewick, Washington.

Attachment #2

Attendance List

Unit Managers Meeting: Grout Treatment Facility  
WHC Office, Lacey, Washington  
April 23, 1992

<u>NAME</u>	<u>ORGANIZATION</u>	<u>PHONE #</u>
John Blacklaw	DOH	(206) 753-3350
Roger Bowman	WHC	(509) 376-4876
Serap Brush	Ecology	(206) 649-7109
Cliff Clark	RL	(509) 376-9333
Mike Cline	WHC	(509) 376-9739
Madan Dev	RL	(509) 376-3412
Kerwin Donato	SWEC	(509) 376-8210
Dan Duncan	EPA	(206) 553-6693
Moses Jaraysi	Ecology	(509) 546-2995
Bob King	Ecology	(206) 459-6727
Kathy Knox	CNES	(509) 376-5011
Tom Moon	WHC	(509) 376-8301
Tom Staehr	WHC	(509) 373-2925
Jay Willenberg	Ecology	(206) 649-7117
George Williamson	WHC	(509) 373-3973
Joe Witczak	Ecology	(206) 438-7557
Ralph Wood	WHC	(509) 373-4731

Attachment #3

Agenda

Unit Managers Meeting: Grout Treatment Facility  
WHC Office, Lacey, Washington  
April 23, 1992

1:00 pm - 4:00 pm    PREVIOUS MEETING MINUTES

PROGRAM STATUS

- Status of Vault Construction
- Engineering Change Notices (B-714-114, -117, -118, -119, -120, -121, -122)

AIR TOPICS

- WAC 173-400, -460 Applicability  
(Notice of Construction)

RCRA TOPICS

- Vault 103 Hydrotest
- Hydrogen Issues
- Permit Application Status

GENERAL TOPICS

- Action items
  - Past action items
  - New action items
- Schedule of next meeting
  - Tentative dates (May ??)
  - Proposed topics

The meeting will take place at the Westinghouse office in Lacey, Washington.

98127531935



Attachment #4

Commitments/Agreements Status  
(Status date: April 23, 1992)

Unit Managers Meeting: Grout Treatment Facility

ACTION ITEM

COMMITMENTS/AGREEMENTS STATUS LIST

1-22-92:1 Formally transmit the Grout Verification Plan to Ecology following RL review. Action: R. Wood (WHC), C. Clark (RL)  
CLOSED

12-11-91:1 Ecology will forward to its consultant WHC's draft responses to Ecology's comments to PNL Report 7644, and then contact RL to arrange a meeting on the subject. Action: J. Witczak (Ecology)  
REVISED (4-23-92). RL/WHC will contact Ecology within a week to arrange a meeting to discuss Brown and Caldwell's comments to Ecology's comments on the PNL Report 7644. Action: R. Wood (WHC)

11-12-91:1 WHC will provide Ecology and EPA with a copy of ECN 104. Action: M. Cline (WHC)  
CLOSED

11-12-91:2 WHC will provide Ecology and EPA with the specification designation number of the ECN dealing with design changes at the vent tubes by which the tube diameter was enlarged from 0.1 inch to 0.18 inch. Action: M. Cline (WHC)  
CLOSED

11-12-91:3 WHC will finalize a draft response to Brown & Caldwell's comments on the PNL and Greg Whyatt report; and following a review by DOE, WHC will submit the draft response to Ecology the first week of December 1991. Action: J. Voogd (WHC)  
CLOSED

11-12-91:4 WHC will obtain laboratory test results and other data needed to resolve the hydrogen issue by the end of February or March 1992. Action: J. Voogd (WHC)  
CLOSED

10-10-91:1 Check the status of response to Ecology's concerns regarding tritium control and hydrogen venting. Action: C. Clark (RL)

CLOSED

8-9-91:1 Provide list of 39 lessons learned on grout design and construction to Ecology and EPA. Action: T. Staehr (WHC)

CLOSED

8-9-91:2 Provide grout sampling plan to Ecology and EPA. Action: R. Wood (WHC)

CLOSED

7  
6  
5  
4  
3  
2  
1  
0  
9  
8  
7  
6  
5  
4  
3  
2  
1  
0

## ENGINEERING CHANGE NOTICE

Page 1 of 9

1. ECN ~~159380~~

Proj. ECN B-714-114

2. ECN Category (mark one) Supplemental <input checked="" type="checkbox"/> Direct Revision <input type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Supersedure <input type="checkbox"/> Discovery <input type="checkbox"/> Cancel/Void <input type="checkbox"/>	3. Originator's Name, Organization, MSIN, and Telephone No. T.K. Ehrhard, KEH, E6-42, 6-0415		4. Date 02-19-92
	5. Project Title/No./Work Order No. See Block 12	6. Bldg./Sys./Fac. No. 218-E-16	7. Impact Level 3 / SC-2
	8. Document Number Affected (include rev. and sheet no.) See Block 12	9. Related ECN No(s). B-714-111	10. Related PO No. N/A

11a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 11b) <input type="checkbox"/> No (NA Blks. 11b, 11c, 11d) UNKNOWN	11b. Work Package Doc. No. UNKNOWN	11c. Complete Installation Work _____ Cog. Engineer Signature & Date	11d. Complete Restoration (Temp. ECN only) _____ Cog. Engineer Signature & Date
---	---------------------------------------	--	---

12. Description of Change Block 5: B-714, Grouted Waste Disposal Facilities/ER8007 Block 8: Drawings - H-2-77581, SH 2, Rev 2 H-2-77590, SH 1, Rev 1 H-2-77591, SH 1, Rev 1 H-2-78457, SH 2, Rev 1 H-2-78464, SH 1, Rev 1 H-2-78465, SH 1, Rev 1 Specification B-714-C2, Rev 1 (V-B714C2-003)	Items 1,4,7 SC-3	Items 2,3,5,6 SC-2
---	---------------------	-----------------------

\*\*\*\*\*

## DESCRIPTION OF CHANGES ON SUCCEEDING PAGES

Block 13B continued: (CE): Weldment of riser flange & plug not depicted as in design. 3/16 inch fillet does not meet welding code AWS D1.1 requirements (Item 1 and 4) (Ref NCR #B-714-93). (DE): Blockouts relocated to correct location with piping jumper arrangement drawings (Item 2 & 5). North orientation corrected to become compatible with piping jumper arrangement drawings (Item 3 & 6).

Items 2,3,5, and 6 affect Safety Class 2 pit covers and the changes are only arrangement orientations which do not affect the original design.

13a. Justification (mark one) Criteria Change <input type="checkbox"/> Design Improvement <input checked="" type="checkbox"/> Environmental <input type="checkbox"/> As-Found <input type="checkbox"/> Facilitate Const. <input type="checkbox"/> Const. Error/Omission <input checked="" type="checkbox"/> Design Error/Omission <input checked="" type="checkbox"/>	13b. Justification Details (DI): Previously WHC Utilities preferred the use of field replaceable primary and current limiting transformer fuses. WHC Utilities now prefers that only primary fuses be field replaceable. This will permit procurement of an industry standard type transformer rather than a special type transformer and will result in a cost savings (Item 7). CONTINUED IN BLOCK 12 ABOVE
--	---

14. Distribution (include name, MSIN, and no. of copies)			
KEH DISTRIBUTION Const Doc Cntl E2-50 WHC DISTRIBUTION Project Files R1-28 J. K. Epperley R1-29 T. K. Cordray S1-54 STA 10 A3-87 STA 6 T2-03 Lupe Garza A3-80	J. S. Hill [2] K. S. McCullough M. A. Scott [4] T. W. Staeh (PE) J. E. Vanbeek G. H. Weissberg DOE A. G. Lassila	H4-57 H5-34 R4-05 R3-27 R3-27 R3-10 A5-10	RELEASE STAMP M. G. 300 4/11/92 OFFICIAL RELEASE BY WHC DATE FEB 28 1992 STA 4

## ENGINEERING CHANGE NOTICE

Page 2 of 9

1. ECN (use no. from pg. 1)

B-714-114

## 15. Design Verification Required

☐ Yes☒ No

## 16. Cost Impact

## ENGINEERING

Additional ☒ \$ 1775<sup>00</sup>Savings ☐ \$ \_\_\_\_\_

## CONSTRUCTION

Additional ☒ \$ 30,000Savings ☐ \$ \_\_\_\_\_

## 17. Schedule Impact (days)

Improvement ☐ N/ADelay ☐ \_\_\_\_\_

## 18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

## 19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number/Revision

## 20. Approvals

Signature

Date

Signature

Date

## OPERATIONS AND ENGINEERING

## ARCHITECT-ENGINEER

Cog./Project Engineer W. Steinhilber 2-27-92PE C. B. 2-26-92Cog./Project Engr. Mgr. J. E. Bock 2-27-92QA R. J. Fillion 2-26-92QA D. K. Casper 2-27-92Safety J. Schepard 2-25-92

Safety \_\_\_\_\_

Design STRL: J. Schepard 2-25-92

Security \_\_\_\_\_

Other ELEC: A. R. Snowwhite 2-24-92

Proj. Prog./Dept. Mgr. \_\_\_\_\_

PLE: A. R. Snowwhite 2-25-92

Def. React. Div. \_\_\_\_\_

COA: M. J. Fillion 2-27-92

Chem. Proc. Div. \_\_\_\_\_

ENVIR R. J. Fillion 2-25-92

Def. Wst. Mgmt. Div. \_\_\_\_\_

## DEPARTMENT OF ENERGY

Adv. React. Dev. Div. \_\_\_\_\_

Proj. Dept. \_\_\_\_\_

## ADDITIONAL

Environ. Div. \_\_\_\_\_

IRM Dept. \_\_\_\_\_

Facility Rep. (Ops) \_\_\_\_\_

Other \_\_\_\_\_

1) H-2-77581, SH 2, Rev 2

Detail 8 (Z C7): Modify as shown on page 4 of this ECN.

2) H-2-77590, SH 1, Rev 1

Arrangement Plan (Z C3): Relocate blockouts as shown on page 5 of this ECN.

3) H-2-77591, SH 1, Rev 1

Cover Block Plan (Z F7): Reorient North arrows as shown on page 6 of this ECN.

4) H-2-78457, SH 2, Rev 1

Detail 4 (Z D3): Modify as shown on page 7 of this ECN.

5) H-2-78464, SH 1, Rev 1

Arrangement Plan (Z C3): Relocate Blockouts as shown on page 8 of this ECN.

6) H-2-78465, SH 1, Rev 1

Cover Block Plan (Z F7): Reorient North arrows as shown on page 9 of this ECN.

7) SPEC B-714-C2, Rev 1, Section 16300  
(Affects ECN B-714-111, page 4, para 2.2.2)

Change words in second sentence from "no oil-immersed components such as fuses or lighting arrestors" to read "with field replaceable primary fuses"

REGISTERED ENGINEER REVIEW  
(STRL: Items 1 thru 6)



EXPIRES 4/10/92

REGISTERED ENGINEER REVIEW  
(ELEC: Item 7 only)



EXPIRES 5/31/92

Ref. Dwg.  
H-2-77581

Sh.  
2

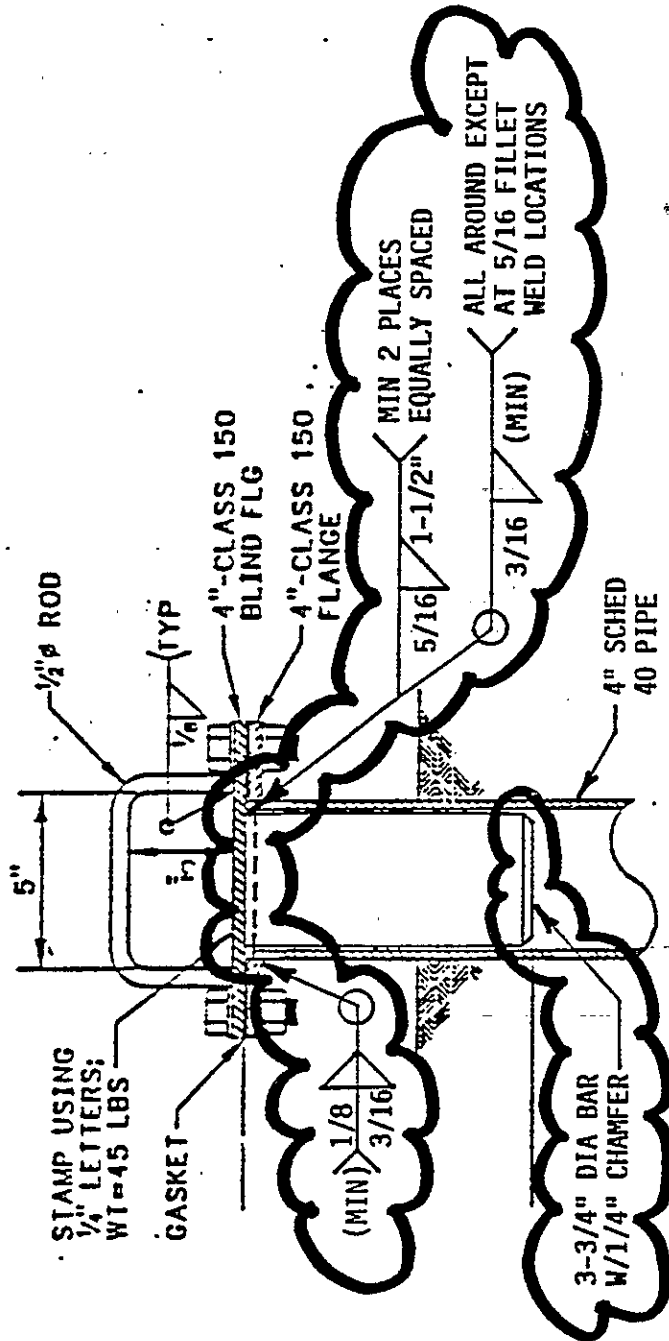
Rev.  
2

Prepared By  
TK EHRHARD

Checked By  
*[Signature]*

ECN No.  
B-714-114

Page  
4/9



**DETAIL 8**  
SCALE: 3"=1'-0"

Ref. Dwg.  
H-2-77590

Sh.  
1

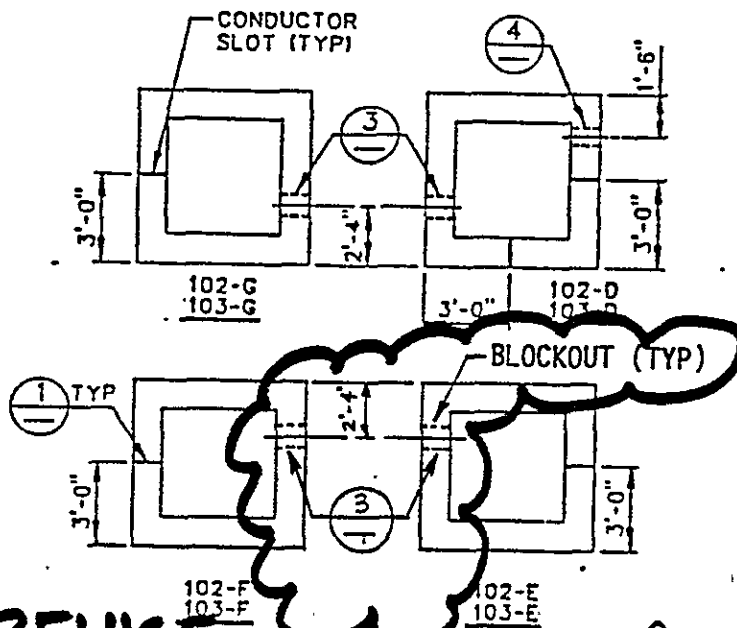
Rev.  
1

Prepared By  
TK EHRHARD

Checked By  
*[Signature]*

ECN No.  
B-714-114

Page  
5/9



**REVISE**

**ARRANGEMENT PLAN**

SCALE: NONE  
FOR PENETRATIONS SEE NOTE 8



Ref. Dwg.  
**H-2-77591**

Sh.  
**1**

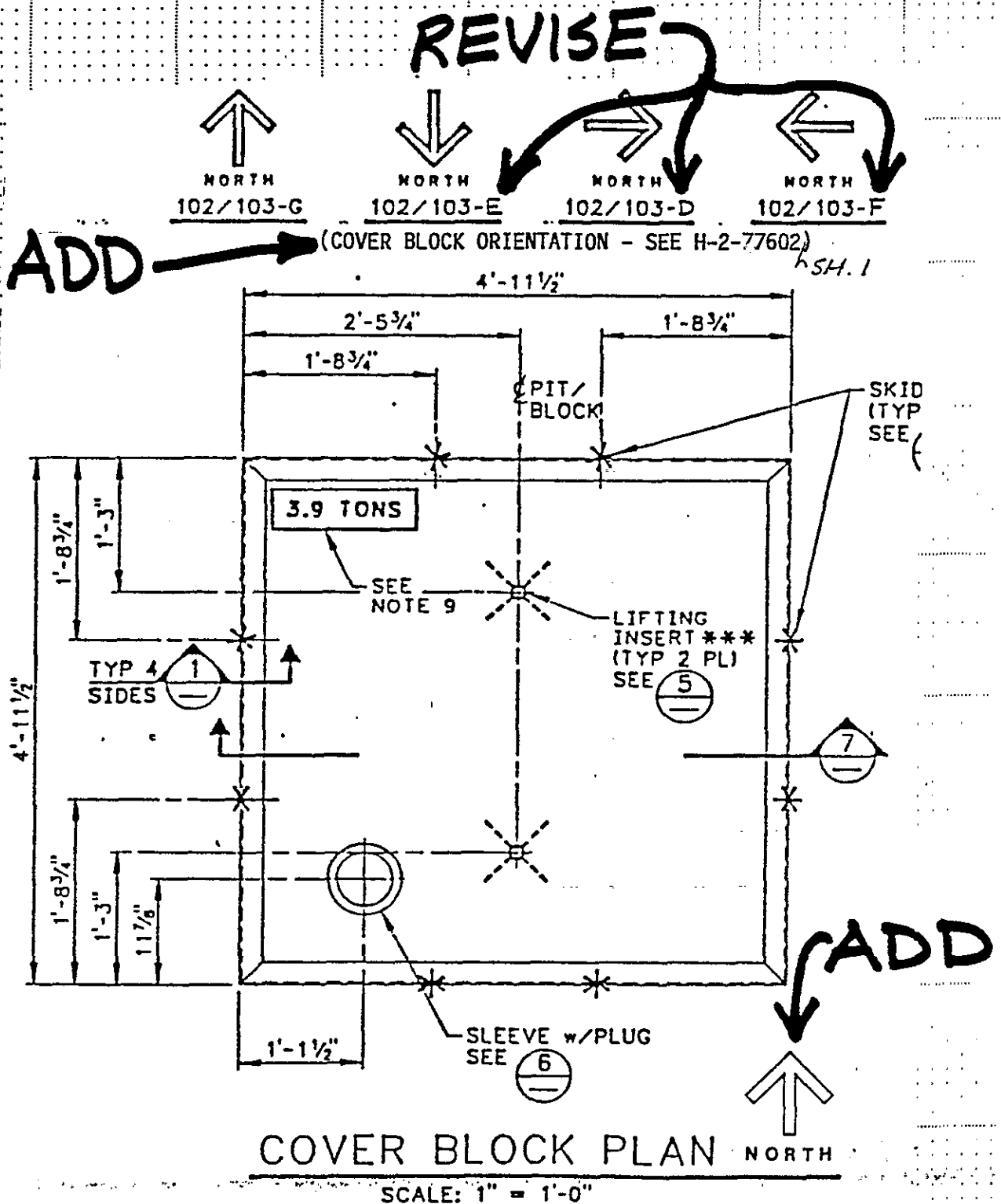
Rev.  
**1**

Prepared By  
**TK EHRHARD**

Checked By  
*[Signature]*

ECN No.  
**B-714-114**

Page  
**6/9**





Ref. Dwg.  
H-2-78457

Sh.  
2

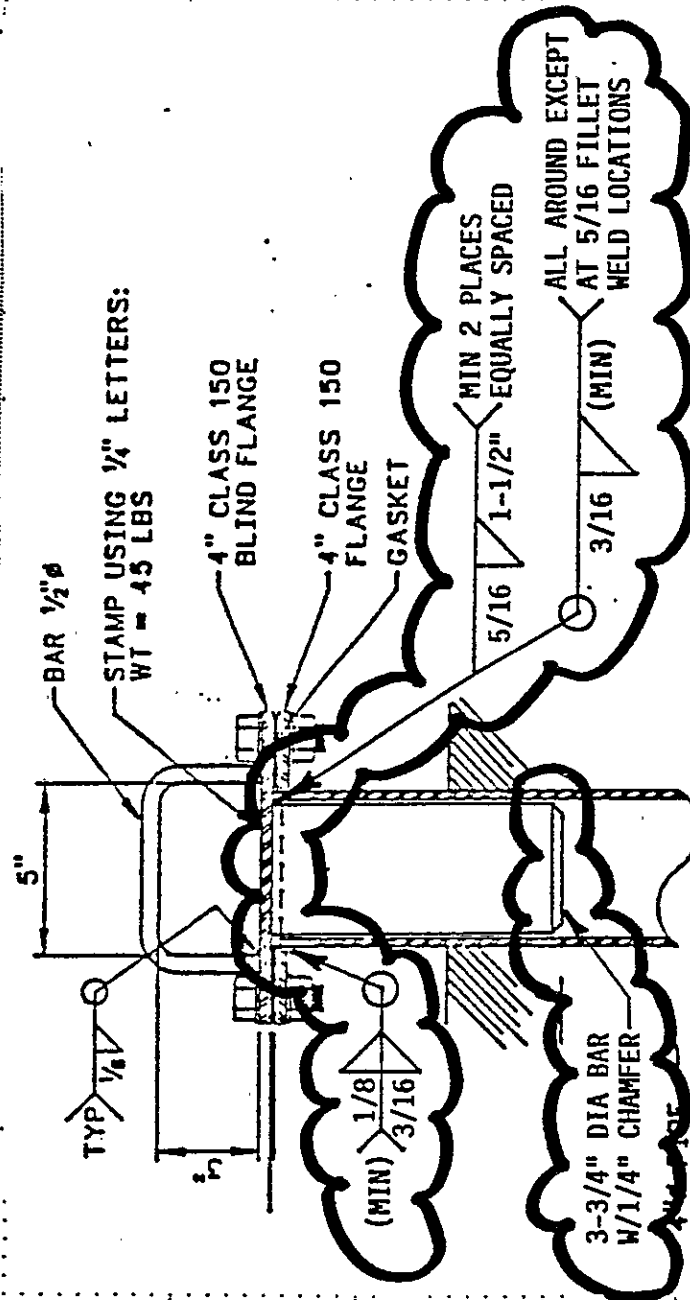
Rev.  
1

Prepared By  
TK EHRHARD

Checked By  
*[Signature]*

ECN No.  
B-714-114

Page  
7/9



4  
H-2-78457  
SH 1

Ref. Dwg.  
**H-2-78465**

Sh.  
**1**

Rev.  
**1**

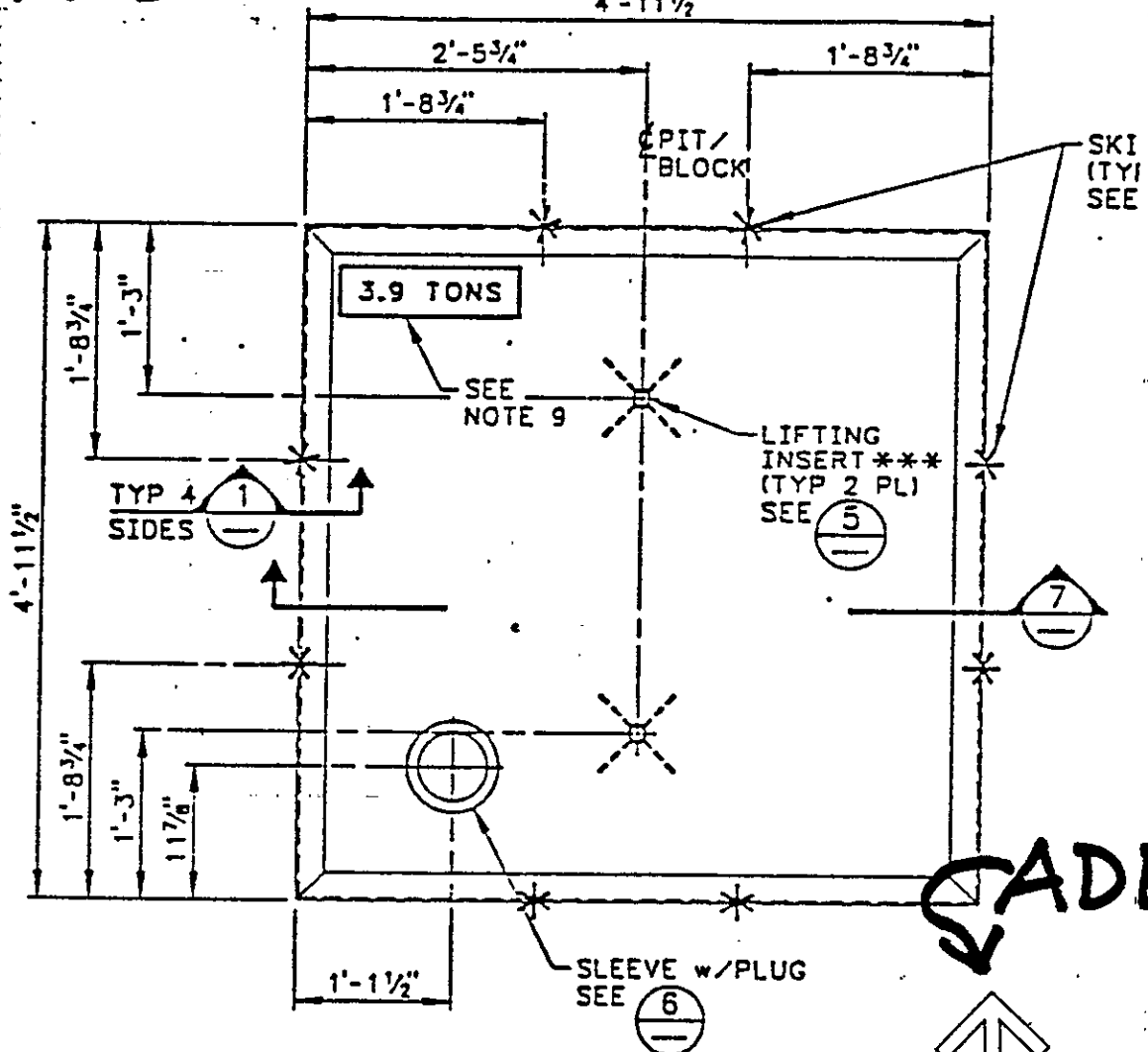
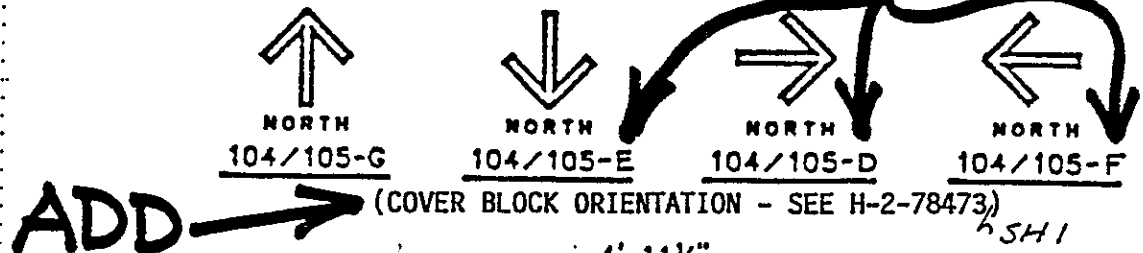
Prepared By  
**TK EHRHARD**

Checked By  
*[Signature]*

ECN No.  
**B-714-114**

Page  
**9/9**

**REVISE**



Ref. Dwg.  
**H-2-78464**

Sh.  
**1**

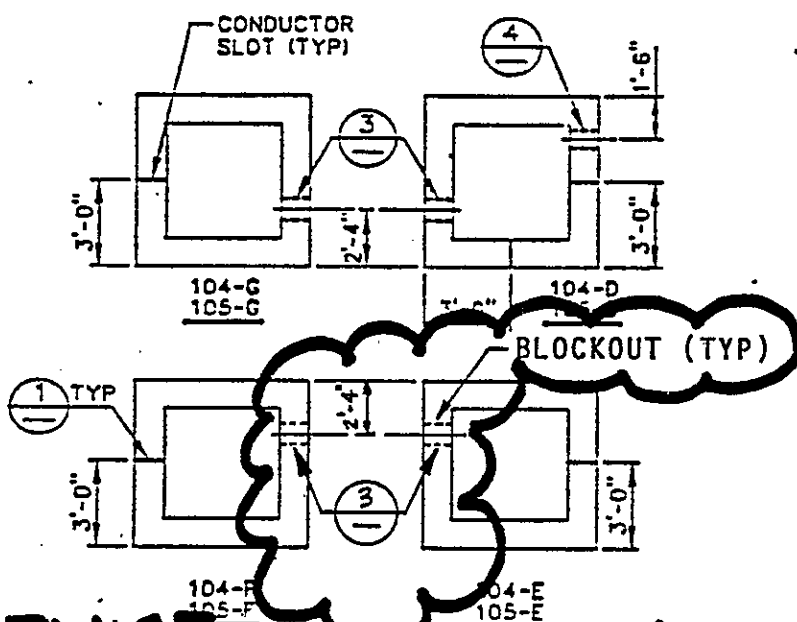
Rev.  
**1**

Prepared By  
**TK EHRHARD**

Checked By  
*[Signature]*

ECN No.  
**B-714-114**

Page  
**8/9**



**REVISE**

**ARRANGEMENT PLAN**



SCALE: NONE  
FOR PENETRATIONS SEE NOTE 8

## ENGINEERING CHANGE NOTICE

Page 1 of 4

1. ECN ~~159395~~

Proj. ECN B-714-117

## 2. ECN Category (mark one)

- Supplemental ☒  
 Direct Revision ☐  
 Change ECN ☐  
 Temporary ☐  
 Supersedure ☐  
 Discovery ☐  
 Cancel/Void ☐

## 3. Originator's Name, Organization, MSIN, and Telephone No.

G.L. Koci, KEH, E6-42, 6-7032

## 4. Date

02-25-92

## 5. Project Title/No./Work Order No.

See Block 12

## 6. Bldg./Sys./Fac. No.

218-E-16

## 7. Impact Level

3 ~~2~~/SC-2

## 8. Document Number Affected (include rev. and sheet no.)

See Block 12

## 9. Related ECN No(s).

B-714-91

## 10. Related PO No.

N/A

## 11a. Modification Work

- ☐ Yes (fill out Blk. 11b)  
☐ No (NA Blks. 11b, 11c, 11d)

UNKNOWN

## 11b. Work Package Doc. No.

UNKNOWN

## 11c. Complete Installation Work

Cog. Engineer Signature &amp; Date

## 11d. Complete Restoration (Temp. ECN only)

Cog. Engineer Signature &amp; Date

## 12. Description of Change

SC-2

Block 5: B-714, Grouted Waste Disposal Facilities/ER8007

Block 8: Specification B-714-C2, Rev 1 (V-B714C2-003)

Drawings: H-2-78457, SH 2, REV 1  
 H-2-77581, SH 2, REV 2

\*\*\*\*\*

## 1) Spec B-714-C2, Section 05500

A. Subparagraph 2.2.1.3, Replace first sentence with: Perform welding in accordance with AWS D 1.1, Section 8, using E70XX electrodes and complete penetration welds unless shown otherwise on drawings.

B. Subparagraph Heading, Add: 2.2.2 Waterstop: Steel  
 (Affects ECN B-714-91, Item 3b)

2) Drawings: H-2-77581, SH 2, Detail 6: REVISE DETAIL AS SHOWN ON PAGE 4  
 H-2-78457, SH 2, Detail 5: REVISE DETAIL AS SHOWN ON PAGE 4

## 13a. Justification (mark one)

- Criteria Change ☐  
 Design Improvement ☐  
 Environmental ☐  
 As-Found ☐  
 Facilitate Const. ☒  
 Const. Error/Omission ☐  
 Design Error/Omission ☒

## 13b. Justification Details

\* SEE PAGE 3 FOR JUSTIFICATION

APPROVED FOR  
 PUBLIC RELEASE

*M. Gonzalez* 4/1/92  
 RELEASE STAMP

## 14. Distribution (include name, MSIN, and no. of copies)

## KEH DISTRIBUTION

Const Doc Cntl E2-50

J. S. Hill [2] H4-57

K. S. McCullough H5-34

M. A. Scott [4] R4-05

T. W. Staeh (PE) R3-27

J. E. Vanbeek R3-27

G. H. Weissberg R3-10

DOE

A. G. Lassila A5-10

## WHC DISTRIBUTION

Project Files R1-28

J. K. Epperley R1-29

T. K. Cordray S1-54

STA 10 A3-87

STA 6 T2-03

LUPR GARZA A3-80

OFFICIAL RELEASE

BY WHC

DATE FEB 28 1992

STA 4

## ENGINEERING CHANGE NOTICE

Page 2 of 4

1. ECN (use no. from pg. 1)

B-714-117

15. Design Verification  
Required☒ Yes  
☐ No

## 16. Cost Impact

## ENGINEERING

Additional ☒ \$ 3550<sup>00</sup>  
Savings ☐ \$

## CONSTRUCTION

Additional ☒ \$ 10,000<sup>00</sup>  
Savings ☐ \$

## 17. Schedule Impact (days)

Improvement ☒ N/A  
Delay ☐

## 18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

## 19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number/Revision

## 20. Approvals

Signature

Date

Signature

Date

## OPERATIONS AND ENGINEERING

Cog./Project Engineer M. Stachur 2-27-92Cog./Project Engr. Mgr. J. E. Beck 2-27-92QA J. K. C. ... 2-27-92

Safety \_\_\_\_\_

Security \_\_\_\_\_

Proj. Prog./Dept. Mgr. \_\_\_\_\_

Def. React. Div. \_\_\_\_\_

Chem. Proc. Div. \_\_\_\_\_

Def. Wst. Mgmt. Div. \_\_\_\_\_

Adv. React. Dev. Div. \_\_\_\_\_

Proj. Dept. \_\_\_\_\_

Environ. Div. \_\_\_\_\_

IRM Dept. \_\_\_\_\_

Facility Rep. (Ops) \_\_\_\_\_

Other \_\_\_\_\_

## ARCHITECT-ENGINEER

PE C. R. ... 2/27/92QA B. R. ... 2-27-92Safety J. ... 2-27-92Design M. ... 2-26-92Other Envir: R. ... 2-27-92PLE: ... 2-26-92C.G.A. J. ... 2-27-92

## DEPARTMENT OF ENERGY

## ADDITIONAL

## JUSTIFICATION FROM BLOCK 13b, PAGE 1

(DO): Design Drawings require partial penetration and fillet welds for metal fabrications (Item 1A).

(DO): ECN B-714-91 deleted entire subparagraph and should have retained the heading (Item 1B).

(FC): NCR B-714-92, Requirement for continuous contact after topping slab placement is to facilitate the contractors air test prior to backfill loading. Full backfill loading/settlement deflections on the end panels will provide continuous contact and compression of the seal material. (Item 2)

SAFETY CLASS 2 ITEMS DO NOT IMPACT THE INTEGRITY OF THE ORIGINAL DESIGN

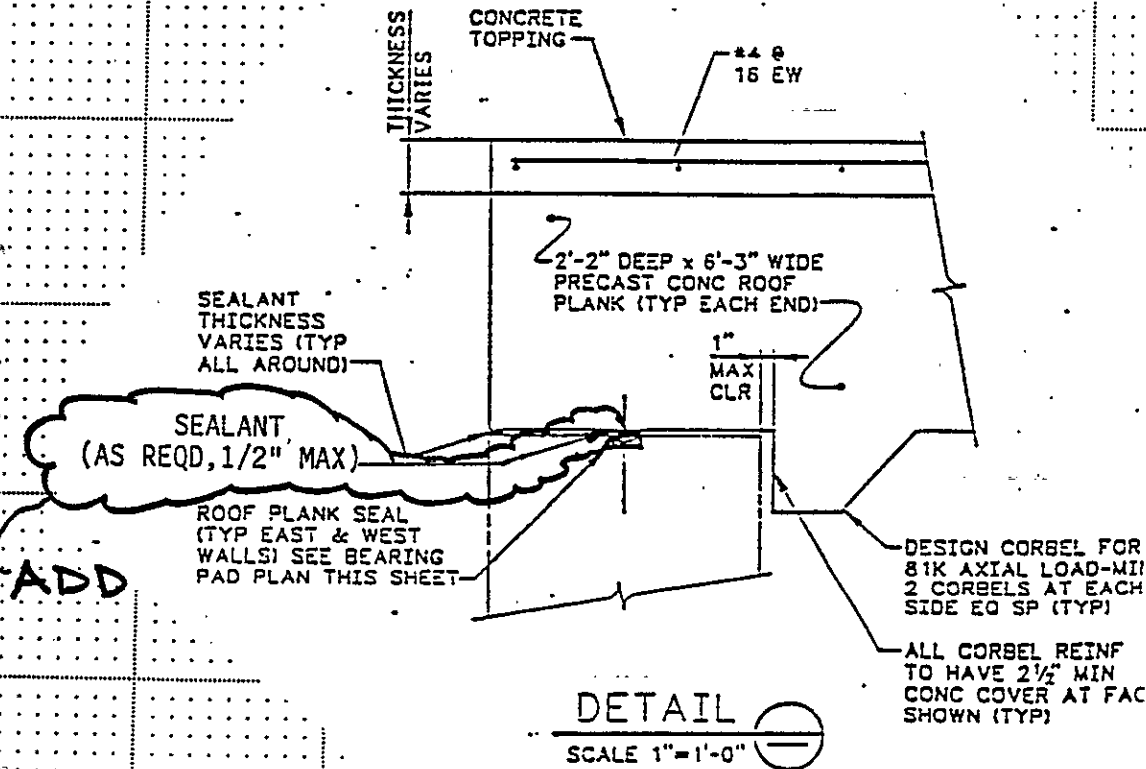
\*\*\*\*\*  
REGISTERED ENGINEER REVIEW



2.27.92

EXPIRES 4/10/92

Ref. Dwg.	Sh.	Rev.	Prepared By	Checked By	ECN No.	Page
H-2-77581, DET 6	2	2	G. Koei	M. Atay 2/26/92	B-714-117	4/4
H-2-78457, DET 5	2	1				



## ENGINEERING CHANGE NOTICE

Page 1 of 5

1. ECN ~~172771~~

Proj. ECN B-714-118

2. ECN Category (mark one) Supplemental <input checked="" type="checkbox"/> Direct Revision <input type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Supersedeure <input type="checkbox"/> Discovery <input type="checkbox"/> Cancel/Void <input type="checkbox"/>	3. Originator's Name, Organization, MSIN, and Telephone No. T.K. EHRHARD, KEH, E6-42, 6-0415		4. Date 03-05-92
	5. Project Title/No./Work Order No. SEE BLOCK 12	6. Bldg./Sys./Fac. No. 218-E-16	7. Impact Level 3 / SC-2
	8. Document Number Affected (include rev. and sheet no.) SEE BLOCK 12	9. Related ECN No(s). B-714-113	10. Related PO No. N/A
	11a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 11b) <input type="checkbox"/> No (NA Blks. 11b, 11c, 11d) UNKNOWN	11b. Work Package Doc. No. UNKNOWN	11c. Complete Installation Work _____ Cog. Engineer Signature & Date

## 12. Description of Change

SC-3

Block 5: B-714, Grouted Waste Disposal Facilities/ER8007

Block 8: Drawings - H-2-77581, Sh 3, Rev 1 H-2-78512, Sh 1, Rev 1  
 H-2-77645, Sh 1, Rev 1 H-2-78513, Sh 1, Rev 1  
 H-2-78457, Sh 3, Rev 1

Specification B-714-C2, Rev 1 (V-B714C2-003)

SEE SUCCEEDING PAGES FOR DESCRIPTION OF CHANGES

## Block 13b (Justification Details) continued:

(FC): Minor differences between enclosure design for Vaults 102/103 & 104/105. Change of design permits contractor to build enclosures the same for all 4 vaults (Item 4 & 5). Contractor submitted substitution request for filler material, which has been approved (Item 6). Operating Contractor elected to perform Hi-Pot test for less than the 15 minutes specified, which is acceptable. Test maximum is 15 minutes (Item 7).  
 (DE): Typographical error (Item 3).

13a. Justification (mark one) Criteria Change <input type="checkbox"/> Design Improvement <input type="checkbox"/> Environmental <input type="checkbox"/> As-Found <input type="checkbox"/> Facilitate Const. <input checked="" type="checkbox"/> Const. Error/Omission <input type="checkbox"/> Design Error/Omission <input checked="" type="checkbox"/>	13b. Justification Details (FC): Contractor is using Class 150 flanges in lieu of Class 125. Therefore, length of bolt needs to be changed to allow for difference in thickness of flanges (Item 1 & 2).  CONTINUED IN BLOCK 12 ABOVE
---	--

## 14. Distribution (include name, MSIN, and no. of copies)

KEH DISTRIBUTION  
Const Doc Cntl E2-50

J. S. Hitt [2] H4-57

K. S. McCullough H5-34

M. A. Scott [4] R4-05

T. W. Staehr (PE) R3-27

J. E. Vanbeek R3-27

G. H. Weissberg R3-10

DOE

A. G. Lassila A5-10

WHC DISTRIBUTION

Project Files R1-28

J. K. Epperley R1-29

T. K. Gordray S1-54

STA 10 A3-87

STA 6 T2-03

L. GARZA A3-80

APPROVED FOR  
 PUBLIC RELEASE  
 4/2/92

OFFICIAL RELEASE

BY WHC

DATE MAR 25 1992

13

STA 4



## ENGINEERING CHANGE NOTICE

Page 2 of 5

1. ECN (use no. from pg. 1)  
8-714-11815. Design Verification  
Required☐ Yes  
☒ No

## 16. Cost Impact

## ENGINEERING

Additional ☒ \$ 2000<sup>00</sup>  
Savings ☐ \$

## CONSTRUCTION

Additional ☒ \$ 500<sup>00</sup>  
Savings ☐ \$

## 17. Schedule Impact (days)

Improvement ☐ N/A  
Delay ☐

## 18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

## 19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number/Revision

## 20. Approvals

Signature

Date

Signature

Date

## OPERATIONS AND ENGINEERING

Cog./Project Engineer DW Stach 3/11/92Cog./Project Engr. Mgr. William B. ... 3/11/92QA FOR TRC 3/19/92

Safety \_\_\_\_\_

Security \_\_\_\_\_

Proj. Prog./Dept. Mgr. \_\_\_\_\_

Def. React. Div. \_\_\_\_\_

Chem. Proc. Div. \_\_\_\_\_

Def. Wst. Mgmt. Div. \_\_\_\_\_

Adv. React. Dev. Div. \_\_\_\_\_

Proj. Dept. \_\_\_\_\_

Environ. Div. \_\_\_\_\_

IRM Dept. \_\_\_\_\_

Facility Rep. (Ops) \_\_\_\_\_

Other \_\_\_\_\_

## ARCHITECT-ENGINEER

PE Q.R. 3/11/92QA B.R. Fullan 3-9-92Safety 1. ... 3-9-92Design STR: Mian Atay 3-9-92Other ELEC: A.R. ... 3-9-92ENVIR: R.H. ... 3-9-92SPECS: J.E. Breed 3-9-92PLE: ... 3-9-92

## DEPARTMENT OF ENERGY

## ADDITIONAL

## KEH REVIEW cont.

ENVIR: R.H. ... 3-9-92COA: Lawrence A. ... 3-10-92

## ENGINEERING CHANGE NOTICE CONTINUATION SHEET

Page 3 of 5

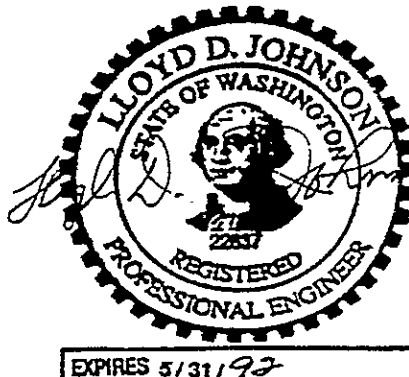
1. ECN

B-714-118

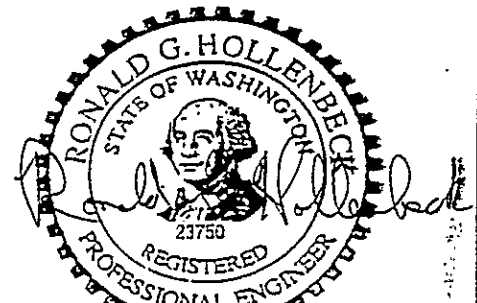
- 1) H-2-77581, Sh 3, Rev 1 (Affects ECN B-714-113, pg 8)  
Detail 10: Change length of hex head bolt from 4" to ~~LENGTH AS REQD~~ <sup>5 3/4"</sup> *3/18/92*
- 2) H-2-78457, Sh 3, Rev 1 (Affects ECN B-714-113, pg 15)  
Detail 7: Change length of hex head bolt from 4" to ~~LENGTH AS REQD~~ <sup>5 3/4"</sup> *3/18/92*
- 3) H-2-77645, Sh 1, Rev 1  
Anode Location Table (Z B8): Change West Coordinate for A(45-5) to "W45896"
- 4) H-2-78512, Sh 1, Rev 1  
Detail 3 (Z C4-F6): Replace - see page 4 of this ECN.
- 5) H-2-78513, Sh 1, Rev 1  
Detail 9 (Z C4-F6): Replace - see page 5 of this ECN.
- 6) SPEC B-714-C2, SECTION 09805  
A) Renumber para 2.1.1 to 2.1.2 and change to read:  
Filler: Carboline 195 Surfacer.  
B) Renumber para 2.1.2 to 2.1.1  
C) Para 3.2.2.2.b: Change "Nu-Klad 114" to "Carboline 195 Surfacer"
- 7) SPEC B-714-C2, SECTION 16300  
A) Para 3.3.2.1.a: Change "15 minutes" to "15 minutes maximum"  
B) Para 3.3.2.2.b: Change "15 minutes" to "15 minutes maximum"

\*\*\*\*\*  
REGISTERED ENGINEER REVIEW  
STRL: Item 1 & 2REGISTERED ENGINEER REVIEW  
ELEC: Item 3, 4, 5 & 7REGISTERED ENGINEER REVIEW  
ENVIR: Item 6 only

EXPIRES 4/10/92



EXPIRES 5/31/92



EXPIRES 3/17/94

*CLB 3/20/92*  
~~N/A~~ *CLB 3/20/92*

## ENGINEERING CHANGE NOTICE SKETCH

Ref. Dwg.

H-2-78512

Sh.

—

20



Prepared By

TE COYNE

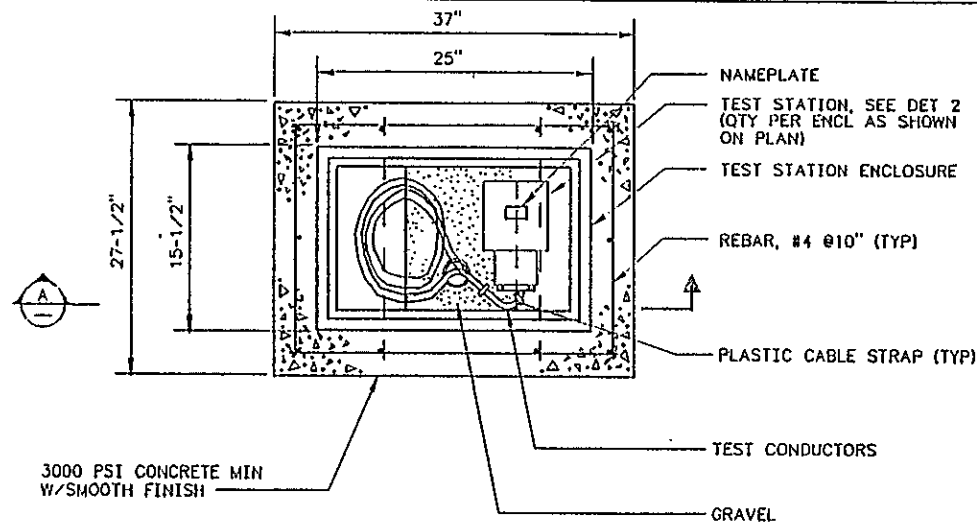
Checked By

L.D. JOHNSON

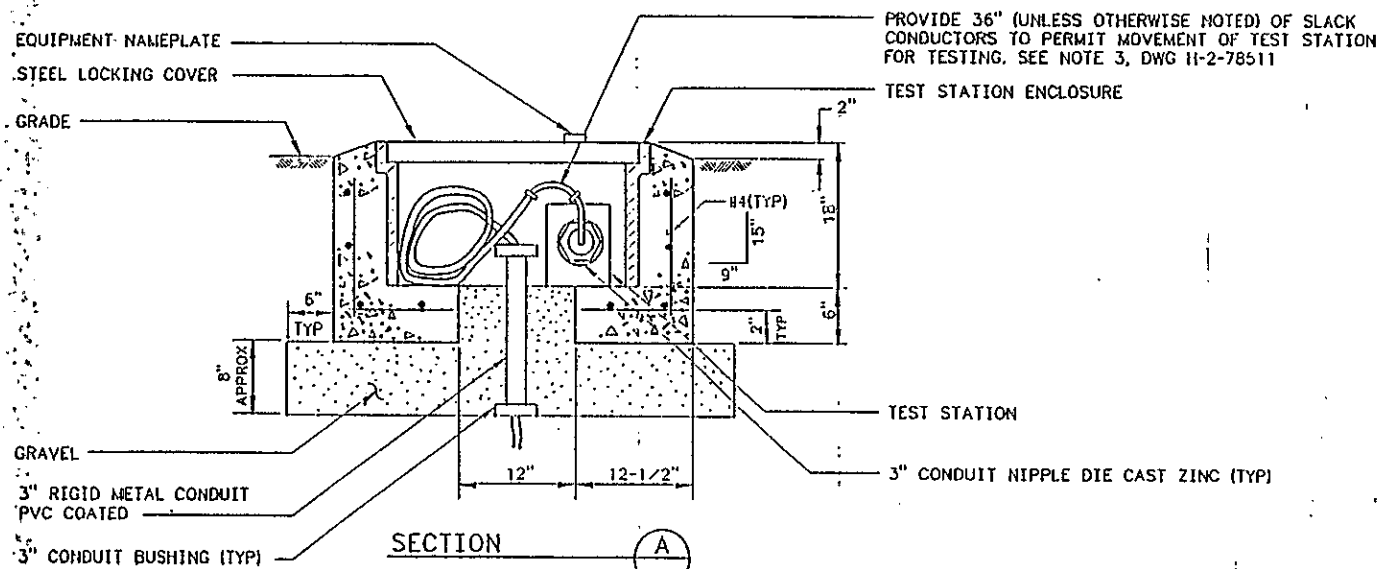
ECN NO

B-714-118

Page

 $\frac{A}{5}$ 

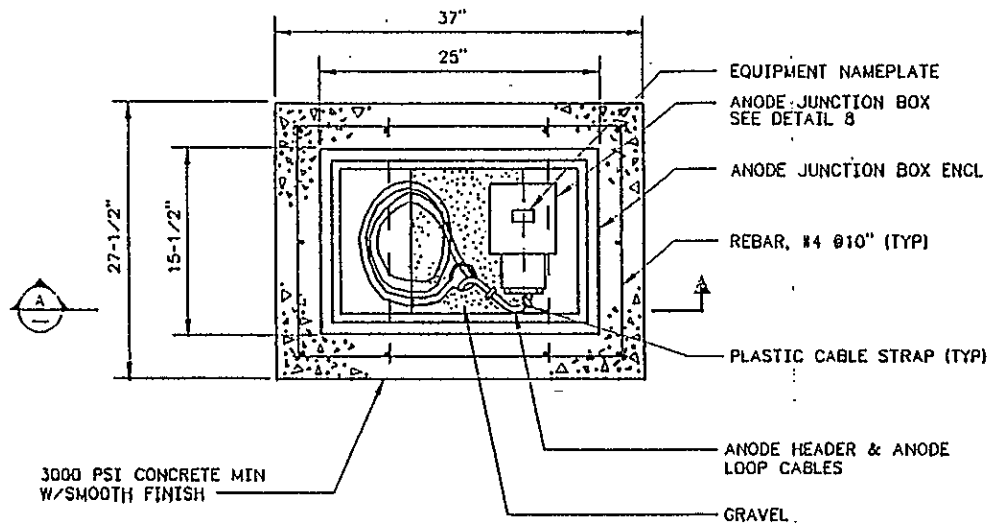
PLAN VIEW  
(COVER REMOVED FOR CLARITY)



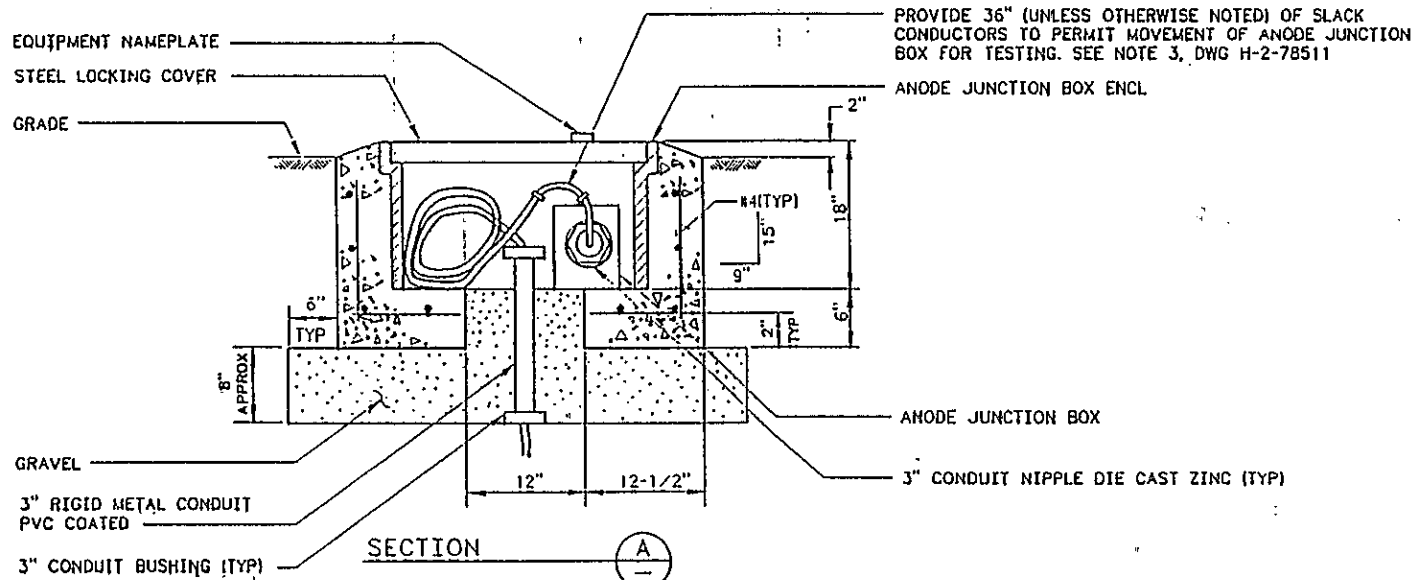
DETAIL

TYPICAL FLUSH MOUNTED  
TEST STATION ENCLOSURE INSTALLATION

9 3 1 2 7 9 1 9 3 5



PLAN VIEW  
(COVER REMOVED FOR CLARITY)



SECTION

DETAIL

TYPICAL FLUSH MOUNTED  
ANODE JUNCTION BOX ENCLOSURE

KAISER ENGINEERS  
HANFORD

ENGINEERING CHANGE NOTICE SKETCH

Ref. Dwg.  
H-2-78513

Sh.  
1

Rev.  
1

Prepared By  
TE COYNE

Checked By  
L.D. JOHNSON

ECN No.  
B-714-118

Page  
5/5

ENGINEERING CHANGE NOTICE				1. ECN <del>172773</del>
Page 1 of <u>6</u>			Proj. ECN B-714-119	
2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.			4. Date
Supplemental <input checked="" type="checkbox"/>	M.A. McLean, KEH, E6-42, 6-5529			03-13-92
Direct Revision <input type="checkbox"/>	5. Project Title/No./Work Order No.		6. Bldg./Sys./Fac. No.	7. Impact Level
Change ECN <input type="checkbox"/>	See Block 12		218-E-16	3 \ SC-2
Temporary <input type="checkbox"/>	8. Document Number Affected (include rev. and sheet no.)		9. Related ECN No(s).	10. Related PO No.
Supersedure <input type="checkbox"/>	See Block 12		None	N/A
Discovery <input type="checkbox"/>	11a. Modification Work	11b. Work Package Doc. No.	11c. Complete Installation Work	11d. Complete Restoration (Temp. ECN only)
Cancel/Void <input type="checkbox"/>	<input type="checkbox"/> Yes (fill out Blk. 11b) <input type="checkbox"/> No (NA Blks. 11b, 11c, 11d)	UNKNOWN	Cog. Engineer Signature & Date	Cog. Engineer Signature & Date
12. Description of Change <span style="float: right;">SC-3</span>				
Block 5: B-714, Grouted Waste Disposal Facilities/ER8007				
Block 8: Drawings - H-2-77600, Sh 1, Rev 2 H-2-78471, Sh 1, Rev 2 H-2-77608, Sh 1, Rev 2 H-2-78478, Sh 1, Rev 2 H-2-77612, Sh 1, Rev 2 H-2-78482, Sh 1, Rev 2				
*****				
SEE SUCCEEDING PAGES FOR DESCRIPTION OF CHANGES				
<div style="text-align: right;"> APPROVED FOR  PUBLIC RELEASE  <i>V. Byklund</i>  4/2/92 </div>				
13a. Justification (mark one)	13b. Justification Details			
Criteria Change <input checked="" type="checkbox"/>	WHC ECN #164402, -dated 11-14-91. Grout Vault negative pressure ranges from 0.3 to 5.0 in. H <sub>2</sub> O when interfaced with exhauster operation. Check valve cracking pressure was increased to keep it from opening.			
Design Improvement <input type="checkbox"/>				
Environmental <input type="checkbox"/>				
As-Found <input type="checkbox"/>				
Facilitate Const. <input type="checkbox"/>				
Const. Error/Omission <input type="checkbox"/>				
Design Error/Omission <input type="checkbox"/>				
14. Distribution (include name, MSIN, and no. of copies)		RELEASE STAMP		
<b>KEH DISTRIBUTION</b> Const Doc Cntl E2-50  <b>WHC DISTRIBUTION</b> Project Files R1-28 J. K. Epperley R1-29 T. K. Cordray S1-54 STA 10 A3-87 STA 6 T2-03		J. S. Hill [2] H4-57 K. S. McCullough H5-34 M. A. Scott [4] R4-05 T. W. Staehr (PE) R3-27 J. E. Vanbeek R3-27 G. H. Weissberg R3-10 DOE A. G. Lassila A5-10		
		OFFICIAL RELEASE BY WHC DATE MAR 16 1992 STA 4		

# ENGINEERING CHANGE NOTICE

Page 2 of 6

1. ECN (use no. from pg. 1)  
B-714-119

## 15. Design Verification Required

☐ Yes  
☒ No

## 16. Cost Impact

### ENGINEERING

Additional ☒ \$ 1562<sup>00</sup>  
Savings ☐ \$ \_\_\_\_\_

### CONSTRUCTION

Additional ☒ \$ 5000<sup>00</sup>  
Savings ☐ \$ \_\_\_\_\_

## 17. Schedule Impact (days)

Improvement ☐ N/A  
Delay ☐ \_\_\_\_\_

## 18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

## 19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number/Revision

## 20. Approvals

Signature

Date

Signature

Date

### OPERATIONS AND ENGINEERING

Cog./Project Engineer W. Stach 3-16-92  
Cog./Project Engr. Mgr. J. E. Van Buren 3/16/92  
QA J. K. Cordery 3/16/92  
Safety \_\_\_\_\_  
Security \_\_\_\_\_  
Proj. Prog./Dept. Mgr. \_\_\_\_\_  
Def. React. Div. \_\_\_\_\_  
Chem. Proc. Div. \_\_\_\_\_  
Def. Wst. Mgmt. Div. \_\_\_\_\_  
Adv. React. Dev. Div. \_\_\_\_\_  
Proj. Dept. \_\_\_\_\_  
Environ. Div. \_\_\_\_\_  
IRM Dept. \_\_\_\_\_  
Facility Rep. (Ops) \_\_\_\_\_  
Other \_\_\_\_\_

### ARCHITECT-ENGINEER

PE C. B. 3/13/92  
QA A. W. Thompson 3-13-92  
Safety S. Schaeffer 3-13-92  
Design PIPING: M. A. McLean 3/13/92  
Other ENVIR: B. Stollenbach 3/13/92  
PLE: B. Stollenbach 3/13/92  
CQA: David McShane 3/13/92

### DEPARTMENT OF ENERGY

### ADDITIONAL

## ENGINEERING CHANGE NOTICE CONTINUATION SHEET

Page 3 of 6

1. ECN

8-714-119

1) H-2-77600, Sh 1, Rev 2

Plan (Z 4D): Change callout "\*PIT DRAIN SEAL ASSY SEE DWG H-2-77608" to read "PIT DRAIN SEAL ASSY #1, SEE DWG H-2-77608"

2) H-2-77608, Sh 1, Rev 2

- A) Parts List: Modify - see page 4 of this ECN.  
B) Detail B (Z 5A): Revise callout for PN2 to PN29 as shown on page 5 of this ECN.  
C) Detail A (Z 5D): Add callout for PN30 at location of PN14 as shown on page 6 of this ECN.

3) H-2-77612, Sh 1, Rev 2

Section A (Z 5A): Change callout "PIT DRAIN SEAL ASSY SEE DWG H-2-77608" to read "PIT DRAIN SEAL ASSY #2, SEE DWG H-2-77608"

4) H-2-78471, Sh 1, Rev 2

Plan (Z 4D): Change callout "PIT DRAIN SEAL ASSY SEE DWG H-2-78478" to read "PIT DRAIN SEAL ASSY #1, SEE DWG H-2-78478"

5) H-2-78478, Sh 1, Rev 2

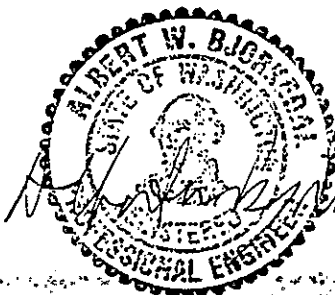
- A) Parts List: Modify - see page 4 of this ECN.  
B) Detail B (Z 5A): Revise callout for PN2 to PN29 as shown on page 5 of this ECN.  
C) Detail A (Z 5D): Add callout for PN30 at location of PN14 as shown on page 6 of this ECN.

6) H-2-78482, Sh 1, Rev 2

Section A (Z 5A): Change callout "PIT DRAIN SEAL ASSY SEE DWG H-2-78478" to read "PIT DRAIN SEAL ASSY #2, SEE DWG H-2-78478"

\*\*\*\*\*

REGISTERED ENGINEER REVIEW - PIPING: All items



Expires: 9/92

Ref. Dwg. H-2-77608	Sh. 1	Rev. 2	Prepared By M.A. McLean	Checked By 2-28-72 Rw. McMichals	ECN No. B-714-119	Page 4/6
------------------------	----------	-----------	----------------------------	--	----------------------	-------------

H-2-78478

1

2

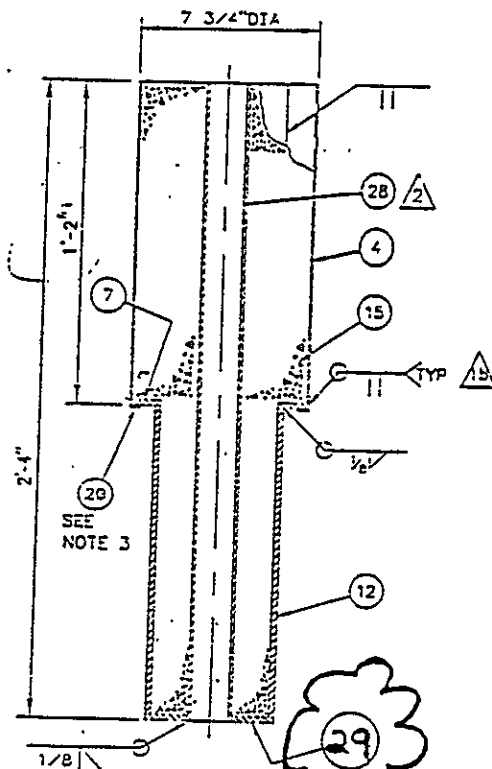
MODIFY

QTY	PN	DESCRIPTION	MATERIAL
	1	ASSEMBLY	
1	3	HOOK, BAR, ROUND 5/8"	ASTM A108 GR 1020
AR	4	12 GAUGE SHEET L10461	ASTM A569
AR	5	WIRE CLOTH 5 X6 X053 NO 9220135 McMASTER-CARR CAT#92	GALVANIZED STEEL
1	1	PLATE 1/2"THK X 3"OD X 1 1/8"ID	ASTM A36
1	1	PLATE 1/4"THK X 7 3/4"OD X 5"ID	ASTM A36
AR	8	PIPE 1 1/2" SCHED 40 **	ASTM A106 GR B
1	9	PLATE 1/4"THK X 5"DIA W/1 11/32"DIA HOLE	ASTM A36
1	10	PLATE 3/8"THK X 5 9/16"OD X 2"ID	ASTM A36
1	11	GUIDE PIPE, 6" SCHED 40	ASTM A53 TYPE S GR B
AR	12	PIPE, 5" SCHED 40	ASTM A53 TYPE S GR B
AR	13	PIPE, 3/4" SCHED 80 **	ASTM A106 GR B
1	14	CHECK VALVE, 2" 150# 7.0 IN H <sub>2</sub> O CRACKING PRESS	CHECK ALL MFG CO 2" FIV-SS-T-1/4
AR	15	SHIELDING (APPROX WT 143 LBS)	CONCRETE-COMMERCIAL
1	16	GASKET 1/4"THK X 5"OD X 3"ID	NEOPRENE RUBBER 35-45 DUROMETER
1	17	ROD, 3/4"DIA X 7" LONG	ASTM A108 GR 1020
1	18	PIPE, 3" SCHED 40	ASTM A53 TYPE S GR B
1	19	PIPE, 1" SCHED 40	ASTM A106 TYPE S GR B
1	20	GASKET, 1/8"THK X 7 3/4"OD X 6 3/4"ID	NEOPRENE CARLOCK 12312
1	21	FLANGE, BLIND RF 8" CLASS 150 **	ASTM A105
8	22	BOLT, HEX HD 3/4"-10 UNC-2A x 3 1/2" L **	ASTM A307 GR B
2	23	BAR, 1 1/16" DIA x 1/2" L **	ASTM A108 GR 1018
AR	24	GASKET CEMENT	JM FORMULA FL-300 ADHESIVE
1	25	GASKET 1/16" THK x 10 3/8" OD x 2" ID **	ANCHOR PACKING CO NO 441
2	26	O-RING, **	PARKER SEALS PT NO 7-318 STYLONE DODDMEF
2	27	O-RING RETAINER **	ASTM A240-304
AR	28	PIPE 1 1/2" SCHED 40	ASTM A106 GR B
1	29	PLATE, 1/4" THK x 5 9/16" OD x 2" ID	ASTM A36
—	30	CHECK VALVE, 2" 150# 7.0 IN H <sub>2</sub> O CRACKING PRESS	CHECK ALL MFG CO 2" FIV-SS-T-1/4



Ref. Dwg. H-2-77608	Sh. 1	Rev. 2	Prepared By M.A. McLean	Checked By 2-28-92 AW Mc Michale	ECN No. B-714-119	Page 5/6
------------------------	----------	-----------	----------------------------	--	----------------------	-------------

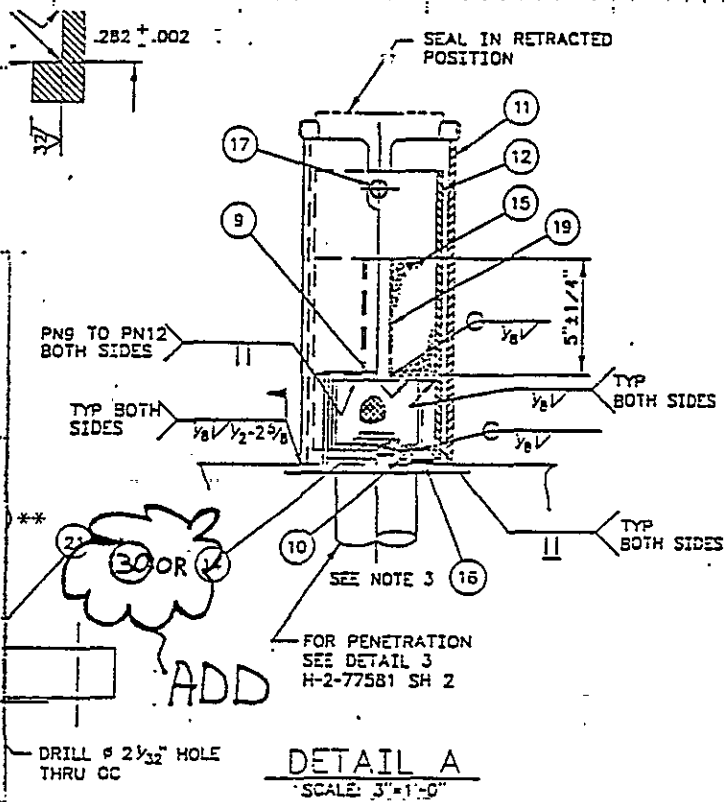
H-2-78478	1	2
-----------	---	---



DETAIL B  
SCALE: 3"=1'-0"

REVISE

Ref. Dwg.	Sh.	Rev.	Prepared By	Checked By	ECN No.	Page
H-2-77608	1	2	MA McLean	2-23-92 a.w. McMichael	B-714-119	6/6
H-2-78478	1	2				



## ENGINEERING CHANGE NOTICE

Page 1 of 31. ECN ~~XXXXXX~~

Proj. ECN B-714-120

4. Date

03-23-92

## 2. ECN Category (mark one)

- Supplemental ☒  
 Direct Revision ☐  
 Change ECN ☐  
 Temporary ☐  
 Supersedeure ☐  
 Discovery ☐  
 Cancel/Void ☐

## 3. Originator's Name, Organization, MSIN, and Telephone No.

M.A. HAQ, KEH, E6-42, 6-6837

## 5. Project Title/No./Work Order No.

See Block 12

## 6. Bldg./Sys./Fac. No.

218-E-16

## 7. Impact Level

23 / SC-2

## 8. Document Number Affected (include rev. and sheet no.)

See Block 12

## 9. Related ECN No(s).

None

## 10. Related PO No.

N/A

## 11a. Modification Work

- ☐ Yes (fill out Blk. 11b)  
☒ No (NA Blks. 11b, 11c, 11d)

UNKNOWN

## 11b. Work Package

Doc. No.

N/A

UNKNOWN

## 11c. Complete Installation Work

N/A  
Cog. Engineer Signature & Date

## 11d. Complete Restoration (Temp. ECN only)

N/A  
Cog. Engineer Signature & Date

## 12. Description of Change

SC-2

Block 5: B-714, Grout Waste Disposal Facilities/ER8007

Block 8: H-2-77584, Sh 1, Rev 1

H-2-77590, Sh 1, Rev 1

H-2-78460, Sh 1, Rev 1

H-2-78464, Sh 1, Rev 1

## DESCRIPTION OF CHANGES ON PAGE 3

## BLOCK 13b (Justification Details) continued:

(DE): Cutting intruding rebars/dowels in piping blockouts will not affect the integrity of the Excess Water Pit walls (Item 2 & 4).

CHANGES MADE BY THIS ECN DO NOT IMPACT THE INTEGRITY OF THE ORIGINAL FACILITY DESIGN.

APPROVED FOR  
 PUBLICATION

## 13a. Justification (mark one)

- Criteria Change ☐  
 Design Improvement ☐  
 Environmental ☐  
 As-Found ☐  
 Facilitate Const. ☒  
 Const. Error/Omission ☐  
 Design Error/Omission ☒

## 13b. Justification Details

(FC): Vault Pit walls w/blockouts were designed w/vertical rebars at 12" max spacing & w/additional requirements that rebars be placed adjacent to the openings. If vertical rebars are spaced in such a way that both of these requirements are met, additional #5 rebars at each face of blockout in the walls are not required (Item 1 & 3).

CONTINUED IN BLOCK 12 ABOVE.

## 14. Distribution (include name, MSIN, and no. of copies)

## KEH DISTRIBUTION

Const Doc Cntl E2-50

## WHC DISTRIBUTION

Project Files R1-28

J. K. Epperley R1-29

T. K. Cordray S1-54

STA 10 A3-87

STA 6 T2-03

J. S. Hill [2] H4-57

K. S. McCullough H5-34

M. A. Scott [4] R4-05

T. W. Staehr (PE) R3-27

J. E. Vanbeek R3-27

G. H. Weissberg R3-10

DOE

A. G. Lassila A5-10

## RELEASE STAMP

OFFICIAL RELEASE

BY WHC

DATE

MAR 25 1992

STA 4

## ENGINEERING CHANGE NOTICE

Page 2 of 3

1. ECN (use no. from pg. 1)  
B-714-12015. Design Verification  
Required☒ Yes  
☐ No

## 16. Cost Impact

## ENGINEERING

Additional ☒ \$ 500  
Savings ☐ \$

## CONSTRUCTION

Additional ☒ \$ 500  
Savings ☐ \$

## 17. Schedule Impact (days)

None

Improvement ☐  
Delay ☐

## 18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

## 19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number/Revision

## 20. Approvals

Signature

Date

Signature

Date

## OPERATIONS AND ENGINEERING

Cog./Project Engineer DW Stacker 3-24-92Cog./Project Engr. Mgr. J. Van Bunt 3/24/92QA Sharon K. Coady 3/24/92Safety J. Kroger 3/25/92

Security \_\_\_\_\_

Proj. Prog./Dept. Mgr. \_\_\_\_\_

Def. React. Div. \_\_\_\_\_

Chem. Proc. Div. \_\_\_\_\_

Def. Wst. Mgmt. Div. \_\_\_\_\_

Adv. React. Dev. Div. \_\_\_\_\_

Proj. Dept. \_\_\_\_\_

Environ. Div. \_\_\_\_\_

IRM Dept. \_\_\_\_\_

Facility Rep. (Ops) \_\_\_\_\_

Other \_\_\_\_\_

## ARCHITECT-ENGINEER

PE Shawn for St 3-24-92QA D.R. Sullivan 3-23-92Safety 1. Luchessa 3-23-92Design STRL: Mian Atay 3-23-92Other ENVIR: R. Hollenbeck 3-23-92PLE: St. K. Koo 3-24-92COA: J. A. Sullivan 3-24-92

## DEPARTMENT OF ENERGY

## ADDITIONAL

## ENGINEERING CHANGE NOTICE CONTINUATION SHEET

Page 3 of 3

1. ECN

B-714-120

1) H-2-77584, Sh 1, Rev 1

- A) Section A (Z F3-4): Delete the word "ADDNL" from the #5 VERT REBAR callout.  
B) Section B (Z A7): Delete the word "ADDNL" from the #5 VERT REBAR callout.

2) H-2-77590, Sh 1, Rev 1

Section A (Z D6): Revise the rebar callout as follows:

#6 THREADED DWL (TYP ALL AROUND  
EXCEPT AT PIPING BLOCKOUTS WHERE  
DOWELS/REBARS MAY BE CUT AT THE  
TOP & BOTTOM OF THE BLOCKOUT)

3) H-2-78460, Sh 1, Rev 1

- A) Section A (Z F3-4): Delete the word "ADDNL" from the #5 VERT REBAR callout.  
B) Section B (Z A7): Delete the word "ADDNL" from the #5 VERT REBAR callout.

4) H-2-78464, Sh 1, Rev 1

Section A (Z D6): Revise the rebar callout as follows:

#6 THREADED DWL (TYP ALL AROUND  
EXCEPT AT PIPING BLOCKOUTS WHERE  
DOWELS/REBARS MAY BE CUT AT THE  
TOP & BOTTOM OF THE BLOCKOUT)

\*\*\*\*\*  
REGISTERED ENGINEER REVIEW - STRL only - ALL ITEMS:



EXPIRES 4/10/92

## ENGINEERING CHANGE NOTICE

Page 1 of 81. ECN ~~XXXXXX~~

Proj. ECN B-714-121

## 2. ECN Category (mark one)

- Supplemental ☒  
 Direct Revision ☐  
 Change ECN ☐  
 Temporary ☐  
 Supersedeure ☐  
 Discovery ☐  
 Cancel/Void ☐

## 3. Originator's Name, Organization, MSIN, and Telephone No.

R.G. Hollenbeck, KEH, E6-42, 6-0513

4. Date ~~3-24-92~~

03 / 24 / 92

## 5. Project Title/No./Work Order No. B-714/ER8007

Grouted Waste Disposal Facilities

## 6. Bldg./Sys./Fac. No.

218-E-16

## 7. Impact Level

3 / SC-2

## 8. Document Number Affected (include rev. and sheet no.)

See Block 12

## 9. Related ECN No(s).

NONE

## 10. Related PO No.

N/A

## 11a. Modification Work

- ☐ Yes (fill out Blk. 11b)  
☐ No (NA Blks. 11b, 11c, 11d)  
 UNKNOWN

## 11b. Work Package Doc. No.

UNKNOWN

## 11c. Complete Installation Work

Cog. Engineer Signature &amp; Date

## 11d. Complete Restoration (Temp. ECN only)

Cog. Engineer Signature &amp; Date

## 12. Description of Change

SC-3

## Block 8:

H-2-77582, Sh 1, Rev 1  
 H-2-77582, Sh 2, Rev 0  
 H-2-78451, Sh 1, Rev 1  
 H-2-78451, Sh 2, Rev 0

\*\*\*\*\*

## DESCRIPTION OF CHANGES ON PAGE 3

APPROVED FOR  
 PUBLIC RELEASE  
*V. Burkland*  
 4/10/92

## 13a. Justification (mark one)

- Criteria Change ☐  
 Design Improvement ☐  
 Environmental ☐  
 As-Found ☐  
 Facilitate Const. ☒  
 Const. Error/Omission ☐  
 Design Error/Omission ☐

## 13b. Justification Details

(FC): Allow more versatility in splicing geomembrane (Item 1, 2B, 3 & 4B). Placement of boot collar outside HDPE patch will facilitate welding (Item 2A & 4A).

## 14. Distribution (include name, MSIN, and no. of copies)

## KEH DISTRIBUTION

Const Doc Cntl E2-50

J. S. Hill [2]

H4-57

K. S. McCullough

H5-34

M. A. Scott [4]

R4-05

T. W. Staehr (PE)

R3-27

J. E. Vanbeek

R3-27

G. H. Weissberg

R3-10

DOE

A. G. Lassila

A5-10

## WHC DISTRIBUTION

Project Files R1-28

J. K. Epperley R1-29

T. K. Cordray S1-54

STA 10 A3-87

STA 6 B-03

## RELEASE STAMP

OFFICIAL RELEASE  
BY WHC

DATE MAR 27 1992

STA 4

# ENGINEERING CHANGE NOTICE

Page 2 of 8

1. ECN (use no. from pg. 1)

B-714-121

## 15. Design Verification Required

☐ Yes

☒ No

## 16. Cost Impact

### ENGINEERING

Additional ☒ \$ 710<sup>00</sup>

Savings ☐ \$ \_\_\_\_\_

### CONSTRUCTION

Additional ☐ \$ 0<sup>00</sup>

Savings ☐ \$ \_\_\_\_\_

## 17. Schedule Impact (days)

Improvement ☐ N/A

Delay ☐ \_\_\_\_\_

## 18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

## 19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number/Revision

## 20. Approvals

Signature	Date	Signature	Date
<b>OPERATIONS AND ENGINEERING</b>		<b>ARCHITECT-ENGINEER</b>	
Cog./Project Engineer <u>P.W. Steinhilber</u>	<u>3-25-92</u>	PE <u>G.R.</u>	<u>3/25/92</u>
Cog./Project Engr. Mgr. <u>M.L. Steinhilber</u>	<u>3-25-92</u>	QA <u>B.R. Sullivan</u>	<u>3-25-92</u>
QA <u>J.H. Leardroy</u>	<u>3-25-92</u>	Safety <u>J.L. Leardroy</u>	<u>3-25-92</u>
Safety _____		Design <u>ENVIR ENG: R.H. Leardroy</u>	<u>3/24/92</u>
Security _____		Other <u>ENVIR: J.D. Consort</u>	<u>3/24/92</u>
Proj. Prog./Dept. Mgr. _____		PLE: <u>J.H. Leardroy</u>	<u>3-25-92</u>
Def. React. Div. _____		CQA: <u>J.H. Leardroy</u>	<u>3-25-92</u>
Chem. Proc. Div. _____			
Def. Wst. Mgmt. Div. _____			
Adv. React. Dev. Div. _____			
Proj. Dept. _____			
Environ. Div. _____			
IRM Dept. _____			
Facility Rep. (Ops) _____			
Other _____			

DEPARTMENT OF ENERGY

ADDITIONAL

ENVIRONMENTAL1) H-2-77582, Sh 1, Rev 1

Section A (Z F4): Add detail bubble as shown on page 4 of this ECN.

2) H-2-77582, Sh 2, Rev 0

A) Detail 4 (ZE-F3): Relocate HDPE boot to outside of HDPE patch as shown on page 8 of this ECN.

B) Add new Detail 6 as shown on page 5 of this ECN.

3) H-2-78451, Sh 1, Rev 1

Section A (Z F4): Add detail bubble as shown on page 6 of this ECN.

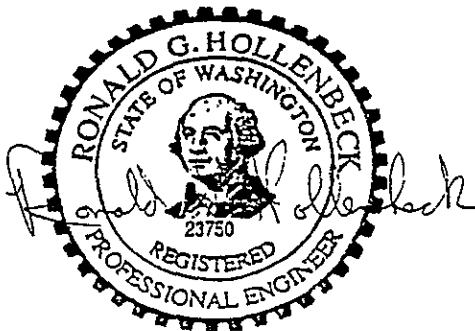
4) H-2-78451, Sh 2, Rev 0

A) Detail 5 (ZE-F3): Relocate HDPE boot to outside of HDPE patch as shown on page 8 of this ECN.

B) Add new Detail 7 as shown on page 7 of this ECN.

\*\*\*\*\*

REGISTERED ENGINEER REVIEW - ENVIR - ALL ITEMS



EXPIRES 3/17/94

93127391937



Ref. Dwg.  
H-2-77582

Sh.  
1

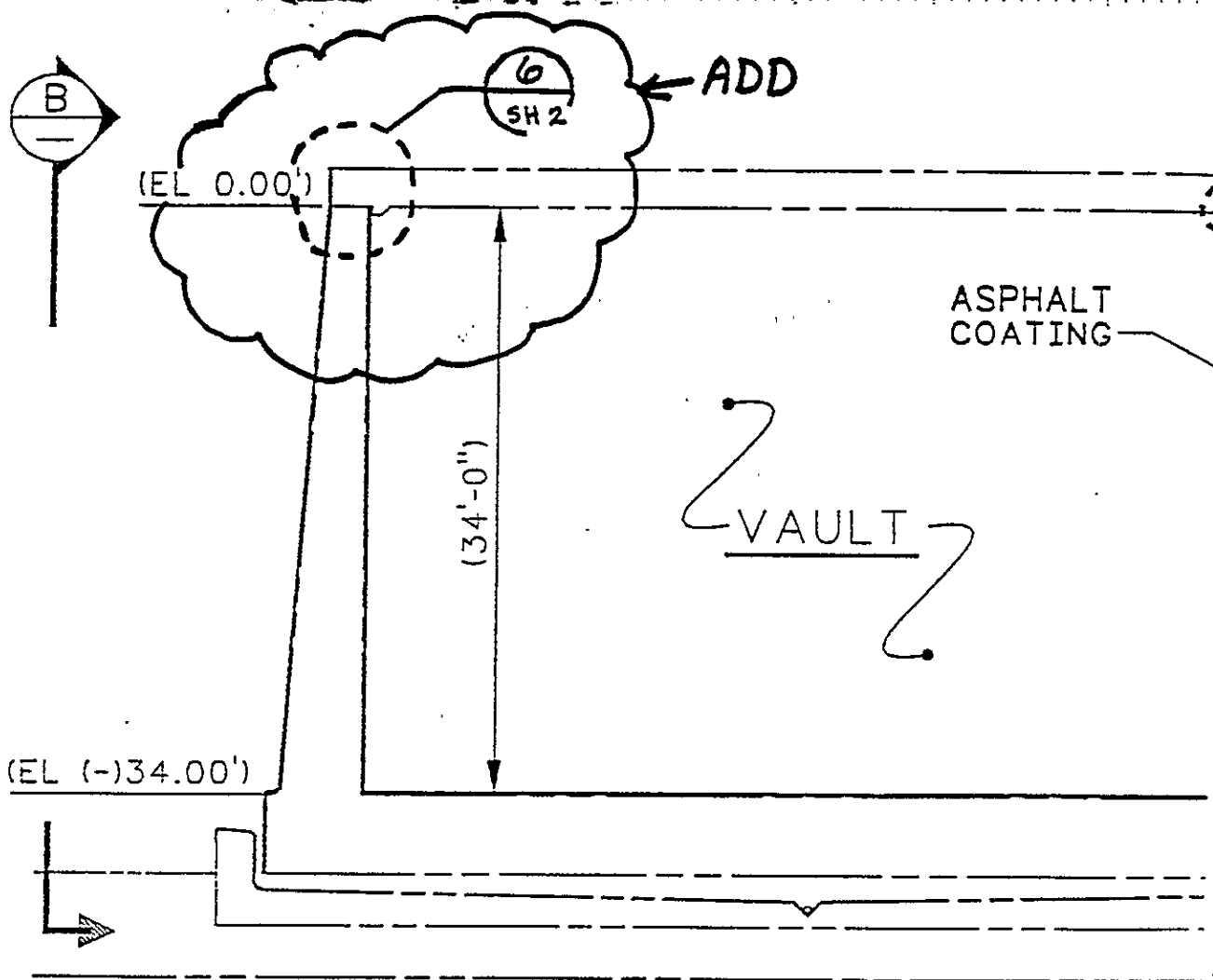
Rev.  
1

Prepared By  
T.K. EHRHARD

Checked By  
*S.D. Consort*

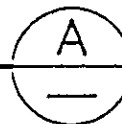
ECN No.  
B-714-121

Page  
**4/8**

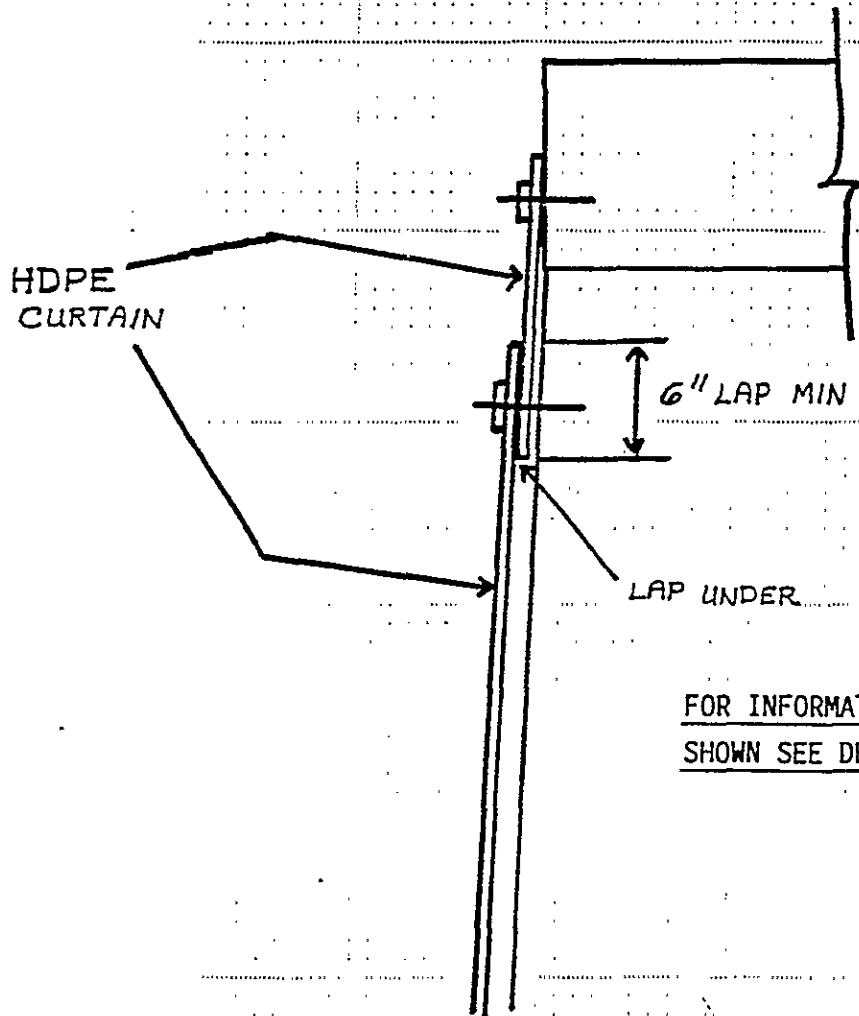


**SECTION**

SCALE: 1" = 10'



Ref. Dwg. H-2-77582	Sh. 2	Rev. 0	Prepared By T.K. EHRHARD	Checked By <i>J.D. Combert</i>	ECN No. B-714-121	Page 5/8
------------------------	----------	-----------	-----------------------------	-----------------------------------	----------------------	-------------



FOR INFORMATION NOT  
SHOWN SEE DETAIL 1, SH 1

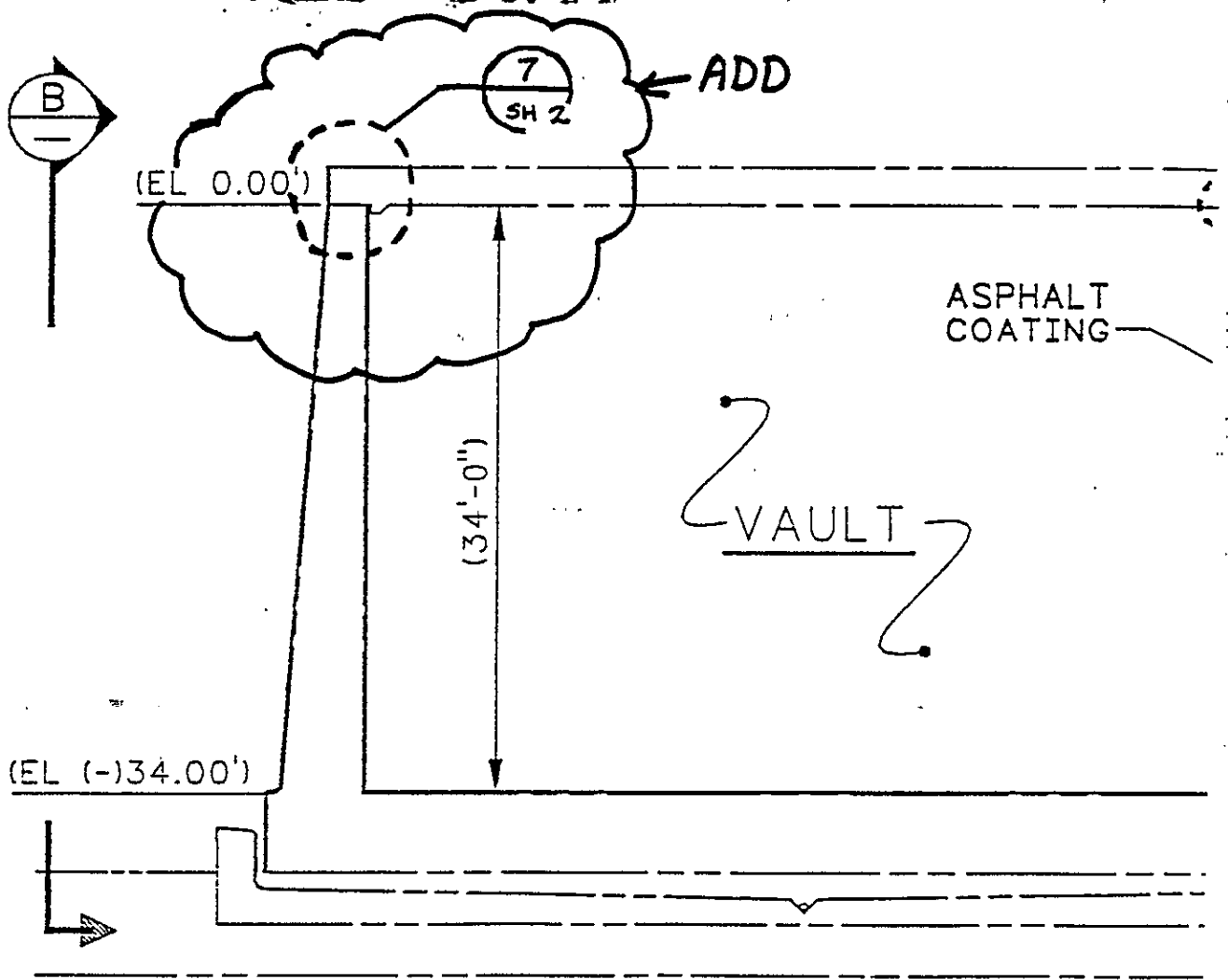
**OPTIONAL HDPE CURTAIN ARRANGEMENT**

**DETAIL**

**SCALE: NONE**

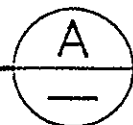
6  
SH 1

Ref. Dwg. H-2-78451	Sh. 1	Rev. 1	Prepared By T.K. EHRHARD	Checked By <i>S.D. Consort</i>	ECN No. B-714-121	Page <i>6/8</i>
------------------------	----------	-----------	-----------------------------	-----------------------------------	----------------------	--------------------



**SECTION**

SCALE: 1" = 10'



Ref. Dwg.  
H-2-78451

Sh.  
2

Rev.  
0

Prepared By  
T.K. EHRHARD

Checked By  
*S.D. Consort*

ECN No.  
B-714-121

Page  
7/8

HDPE  
CURTAIN

6" LAP MIN

LAP UNDER

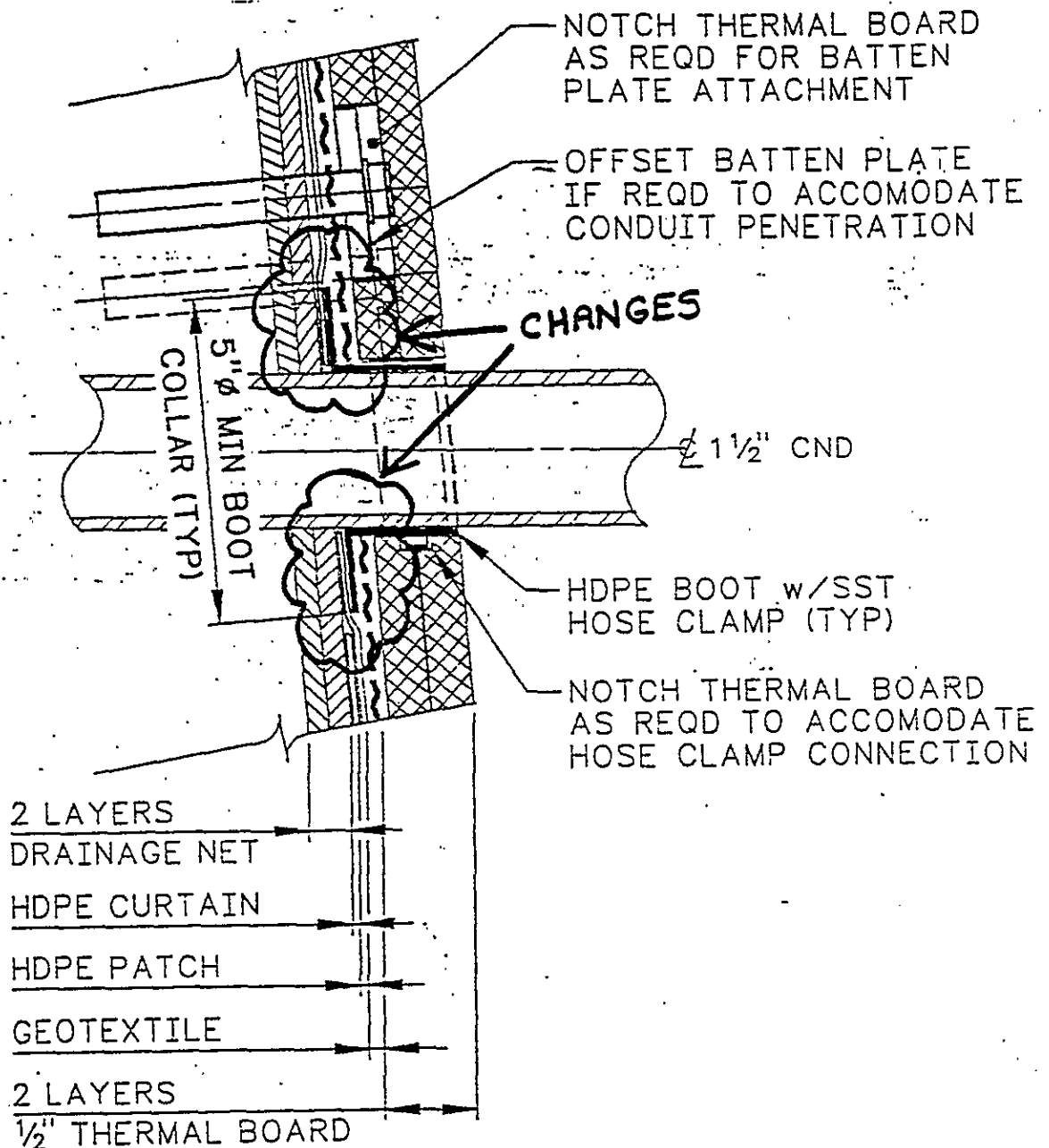
FOR INFORMATION NOT  
SHOWN SEE DETAIL 1, SH 1

OPTIONAL HDPE CURTAIN ARRANGEMENT  
DETAIL

SCALE: NONE

7  
SH 1

Ref. Dwg. H-2-77582	Sh. 2	Rev. 0	Prepared By T.K. EHRHARD	Checked By <i>S.D. Consort</i>	ECN No. B-714-121	Page 8/8
H-2-78451	2	0				



## ENGINEERING CHANGE NOTICE

Page 1 of 8

1. ECN ~~472792~~Proj.  
ECN B-714-122

## 2. ECN Category (mark one)

- Supplemental ☒  
 Direct Revision ☐  
 Change ECN ☐  
 Temporary ☐  
 Supersedure ☐  
 Discovery ☐  
 Cancel/Void ☐

## 3. Originator's Name, Organization, MSIN, and Telephone No.

M.A. McLean, KEH, E6-42, 6-5529

## 4. Date

03-27-92

## 5. Project Title/No./Work Order No. B-714/ER8007

Grouted Waste Disposal Facilities

## 6. Bldg./Sys./Fac. No.

218-E-16

## 7. Impact Level

3 /SC-2

## 8. Document Number Affected (include rev. and sheet no.)

See Block 12

## 9. Related ECN No(s).

B-714-93

## 10. Related PO No.

N/A

## 11a. Modification Work

- ☐ Yes (fill out Blk. 11b)  
☐ No (NA Blks. 11b, 11c, 11d)  
 UNKNOWN

## 11b. Work Package Doc. No.

UNKNOWN

## 11c. Complete Installation Work

Cog. Engineer Signature &amp; Date

## 11d. Complete Restoration (Temp. ECN only)

Cog. Engineer Signature &amp; Date

## 12. Description of Change

SC-3

Block 8: H-2-77598, Sh 1, Rev 1  
 H-2-77599, Sh 1, Rev 1  
 H-2-78470, Sh 1, Rev 0

APPROVED FOR  
 PUBLIC RELEASE

*V. Birkland 4/21/92*

\*\*\*\*\*

## SEE SUCCEEDING PAGES FOR DESCRIPTION OF CHANGES

\*\*\*\*\*

## Block 13b (Justification Details) continued:

(FC): Allowed use of ASTM A36 plate for shims, in addition to ASTM A569 sheet, on all piping support details to facilitate setting pipe elevations. It is difficult to install metal pipe supports on top of Grout Vault in conjunction with placement of diffusion material, where distance between topping slab and bottom of encasement pipe is 4" or less. Allowed use of concrete block support on top of Grout Vault where distance between topping slab and bottom of encasement pipe is from 1-7/8" to 4". Allowed use of shims to be used as pipe support where distance between topping slab and bottom of encasement pipe is less than 1-7/8" (Item 2A, B, E, 3A, B & E). Added new detail for metal pipe support on top of Grout Vault to facilitate placement of diffusion material in conjunction with installation of support for setting pipe elevations (Item 2C & 3C).

## 13a. Justification (mark one)

- Criteria Change ☐  
 Design Improvement ☐  
 Environmental ☐  
 As-Found ☐  
 Facilitate Const. ☒  
 Const. Error/Omission ☐  
 Design Error/Omission ☒

## 13b. Justification Details

(DE): North coordinate callouts for lines 2" EW-102A-M25 w/4" ENC-M26a & 2" EW-103A-M25 w/4" ENC-M26a incorrect (Item 1A & B). Added new detail for metal pipe support on top of Grout Vault where base of support overlaps abrupt elevation changes in topping slab. This is to accommodate topping slab changes resulting from ECN B-714-94 (Item 2D & 3D). JUSTIFICATION DETAILS CONTINUED IN BLOCK 12 ABOVE.

## 14. Distribution (include name, MSIN, and no. of copies)

## KEH DISTRIBUTION

Const Doc Cntl E2-50

## WHC DISTRIBUTION

Project Files R1-28

J. K. Epperley R1-29

T. K. Cordray S1-54

STA 10 A3-87

STA 6 T2-03

J. S. Hill [2] H4-57

K. S. McCullough H5-34

M. A. Scott [4] R4-05

T. W. Staehr (PE) R3-27

J. E. Vanbeek R3-27

G. H. Weissberg R3-10

DOE

A. G. Lassila A5-10

## RELEASE STAMP

OFFICIAL RELEASE

BY WHC

DATE APR 01 1992

STA 4

# ENGINEERING CHANGE NOTICE

Page 2 of 8

1. ECN (use no. from pg. 1)

B-714-122

## 15. Design Verification Required

☐ Yes

☒ No

## 16. Cost Impact

### ENGINEERING

Additional ☒ \$ 5325

Savings ☐ \$ \_\_\_\_\_

### CONSTRUCTION

Additional ☐ \$ TBD

Savings ☐ \$ \_\_\_\_\_

## 17. Schedule Impact (days)

Improvement ☐ N/A

Delay ☐ \_\_\_\_\_

## 18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	<input type="checkbox"/>	Seismic/Stress Analysis	<input type="checkbox"/>	Tank Calibration Manual	<input type="checkbox"/>
Functional Design Criteria	<input type="checkbox"/>	Stress/Design Report	<input type="checkbox"/>	Health Physics Procedure	<input type="checkbox"/>
Operating Specification	<input type="checkbox"/>	Interface Control Drawing	<input type="checkbox"/>	Spares Multiple Unit Listing	<input type="checkbox"/>
Criticality Specification	<input type="checkbox"/>	Calibration Procedure	<input type="checkbox"/>	Test Procedures/Specification	<input type="checkbox"/>
Conceptual Design Report	<input type="checkbox"/>	Installation Procedure	<input type="checkbox"/>	Component Index	<input type="checkbox"/>
Equipment Spec.	<input type="checkbox"/>	Maintenance Procedure	<input type="checkbox"/>	ASME Coded Item	<input type="checkbox"/>
Const. Spec.	<input type="checkbox"/>	Engineering Procedure	<input type="checkbox"/>	Human Factor Consideration	<input type="checkbox"/>
Procurement Spec.	<input type="checkbox"/>	Operating Instruction	<input type="checkbox"/>	Computer Software	<input type="checkbox"/>
Vendor Information	<input type="checkbox"/>	Operating Procedure	<input type="checkbox"/>	Electric Circuit Schedule	<input type="checkbox"/>
OM Manual	<input type="checkbox"/>	Operational Safety Requirement	<input type="checkbox"/>	ICRS Procedure	<input type="checkbox"/>
FSAR/SAR	<input type="checkbox"/>	IEFD Drawing	<input type="checkbox"/>	Process Control Manual/Plan	<input type="checkbox"/>
Safety Equipment List	<input type="checkbox"/>	Cell Arrangement Drawing	<input type="checkbox"/>	Process Flow Chart	<input type="checkbox"/>
Radiation Work Permit	<input type="checkbox"/>	Essential Material Specification	<input type="checkbox"/>	Purchase Requisition	<input type="checkbox"/>
Environmental Impact Statement	<input type="checkbox"/>	Fac. Proc. Samp. Schedule	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<input type="checkbox"/>

## 19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number/Revision

## 20. Approvals

Signature

Date

Signature

Date

### OPERATIONS AND ENGINEERING

Cog./Project Engineer TW Stachin 4-1-92

Cog./Project Engr. Mgr. W Stachin for J VanBeek 4-1-92

QA J.K. Pearson 4-1-92

Safety \_\_\_\_\_

Security \_\_\_\_\_

Proj. Prog./Dept. Mgr. \_\_\_\_\_

Def React Div. \_\_\_\_\_

Chem. Proc. Div. \_\_\_\_\_

Def. Wst. Mgmt. Div. \_\_\_\_\_

Adv. React. Dev. Div. \_\_\_\_\_

Proj. Dept. \_\_\_\_\_

Environ. Div. \_\_\_\_\_

IRM Dept. \_\_\_\_\_

Facility Rep (Ops) \_\_\_\_\_

Other \_\_\_\_\_

### ARCHITECT-ENGINEER

PE C. H. 4/01/92

QA B.R. Sullivan 3-31-92

Safety J. L. ... 3-31-92

Design PIPING: M.A. McLean 3/27/92

Other ENVIR: D. Kollerbeck 3/27/92

PLE: ... 3-31-92

CQA: ... 4-1-92

### DEPARTMENT OF ENERGY

### ADDITIONAL

## ENGINEERING CHANGE NOTICE CONTINUATION SHEET

Page 3 of 8

1. ECN

B-714-122

1) H-2-77598, Sh 1, Rev 1

- A) Plan (Z F3): For line 2" EW-102A-M25 w/4" ENC-M26a, change North coordinate from (N40515.17) to (N40517.50)
- B) Plan (Z D3): For line 2" EW-103A-M25 w/4" ENC-M26a, change North coordinate from (N40428.67) to (N40431.00)

2) H-2-77599, Sh 1, Rev 1

- A) Detail 5: Replace old detail with new detail as shown on page 5 of this ECN. (Affects ECN B-714-93, page 1, item 3B).
- B) Detail 6: Add "SEE NOTE 8", shim callouts & overlap dimension as shown on page 6 of this ECN. (Affects ECN B-714-93, page 4).
- C) Detail 7: Add new detail as shown on page 7 of this ECN.
- D) Detail 8: Add new detail as shown on page 8 of this ECN.
- E) Notes:
- Change Note 7 to read: CONCRETE BASE SUPPORTS ON SOIL SHALL BE ...
  - Add new Notes 8, 9, & 10 as follows:
8. WHEN HEIGHT BETWEEN TOPPING SLAB AND BOTTOM OF PIPE IS OVER 4", USE DETAIL 6 OR 7 AT CONTRACTOR'S OPTION.  
WHEN HEIGHT BETWEEN TOPPING SLAB AND BOTTOM OF PIPE IS 1-7/8" TO 4", USE CONCRETE/SOLID MASONRY BLOCKS (COMMERCIALY AVAILABLE), MINIMUM SIZE 1-7/8" THICK x 4" WIDE x 6" LONG.  
WHEN HEIGHT BETWEEN TOPPING SLAB AND BOTTOM OF PIPE IS LESS THAN 1-7/8", USE ASTM A 36 AND A 569 SHIMS AS REQUIRED. WELD SHIMS TOGETHER AS SHOWN IN DETAIL 5.
9. USE DETAIL 8 WHERE THE BASE OF A METAL PIPE SUPPORT OVERLAPS ABRUPT ELEVATION CHANGES IN THE TOPPING SLAB.
10. PROVIDE ~~TEMPORARY~~ <sup>TEMPORARY MEMBERS</sup> SUPPORT AS REQUIRED TO POSITION PIPE SUPPORT PRIOR TO AND DURING PLACING DIFFUSION MATERIAL.

3) H-2-78470, Sh 1, Rev 0

- A) Detail 5: Replace old detail with new detail as shown on page 5 of this ECN. (Affects ECN B-714-93, page 3, item 7B).
- B) Detail 6: Add "SEE NOTE 8", shim callouts & overlap dimension as shown on page 6 of this ECN. (Affects ECN B-714-93, page 4).
- C) Detail 7: Add new detail as shown on page 7 of this ECN.
- D) Detail 8: Add new detail as shown on page 8 of this ECN.
- E) Notes:
- Change Note 7 to read: CONCRETE BASE SUPPORTS ON SOIL SHALL BE ...
  - Add new Notes 8, 9, & 10 as follows:



## ENGINEERING CHANGE NOTICE CONTINUATION SHEET

Page 4 of 6

1. ECN

B-714-122

8. WHEN HEIGHT BETWEEN TOPPING SLAB AND BOTTOM OF PIPE IS OVER 4", USE  
DETAIL 6 OR 7 AT CONTRACTOR'S OPTION.  
WHEN HEIGHT BETWEEN TOPPING SLAB AND BOTTOM OF PIPE IS 1-7/8" TO 4", USE  
CONCRETE/SOLID MASONRY BLOCKS (COMMERCIALY AVAILABLE), MINIMUM SIZE  
1-7/8" THICK x 4" WIDE x 6" LONG.  
WHEN HEIGHT BETWEEN TOPPING SLAB AND BOTTOM OF PIPE IS LESS THAN 1-7/8",  
USE ASTM A 36 AND A 569 SHIMS AS REQUIRED. WELD SHIMS TOGETHER AS SHOWN  
IN DETAIL 5.
9. USE DETAIL 8 WHERE THE BASE OF A METAL PIPE SUPPORT OVERLAPS ABRUPT  
ELEVATION CHANGES IN THE TOPPING SLAB.
10. PROVIDE TEMPORARY SUPPORT AS REQUIRED TO POSITION PIPE SUPPORT PRIOR TO  
AND DURING PLACING DIFFUSION MATERIAL.

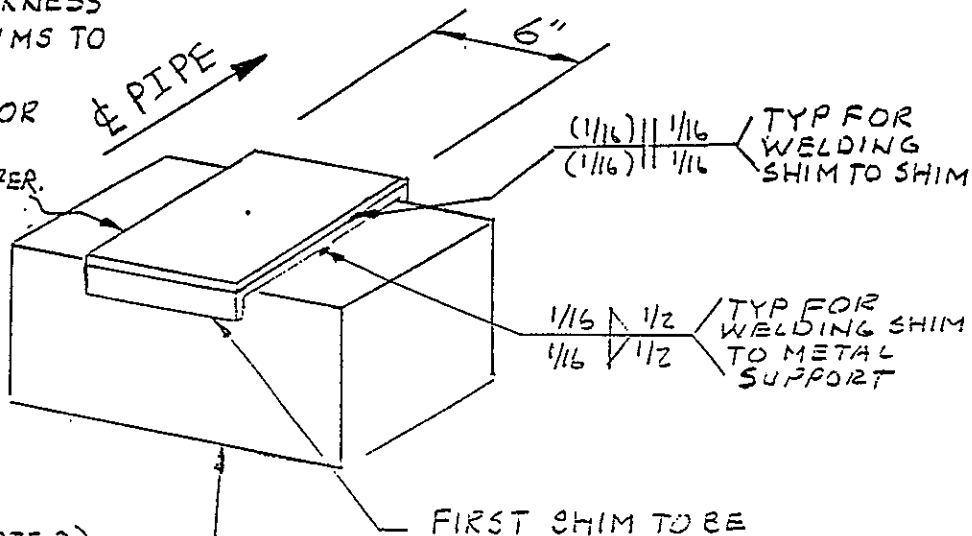
\*\*\*\*\*  
REGISTERED ENGINEER REVIEW - PIPING (All Items)

EXPIRES: 9/15/92

Ref. Dwg.	Sh.	Rev.	Prepared By	Checked By	ECN No.	Page
H-2-77599	1	1	D. McDORMAN	M.A. McLean	B-714-122	5/8
H-2-78470	1	0				

NUMBER AND THICKNESS  
OF ADDITIONAL SHIMS TO  
BE AS REQUIRED.

ASTM A36 PLATE OR  
A569 SHEET.  
WELD SHIMS TOGETHER.



CONCRETE SUPPORT  
ON SOIL (SEE NOTE 7)  
OR CONCRETE BLOCK  
ON TOPPING SLAB (SEE NOTE 8)  
OR METAL SUPPORT  
ON TOPPING SLAB (SEE DET 6 OR 7)

FIRST SHIM TO BE  
ASTM A569 SHEET  
10 GA (.1345)

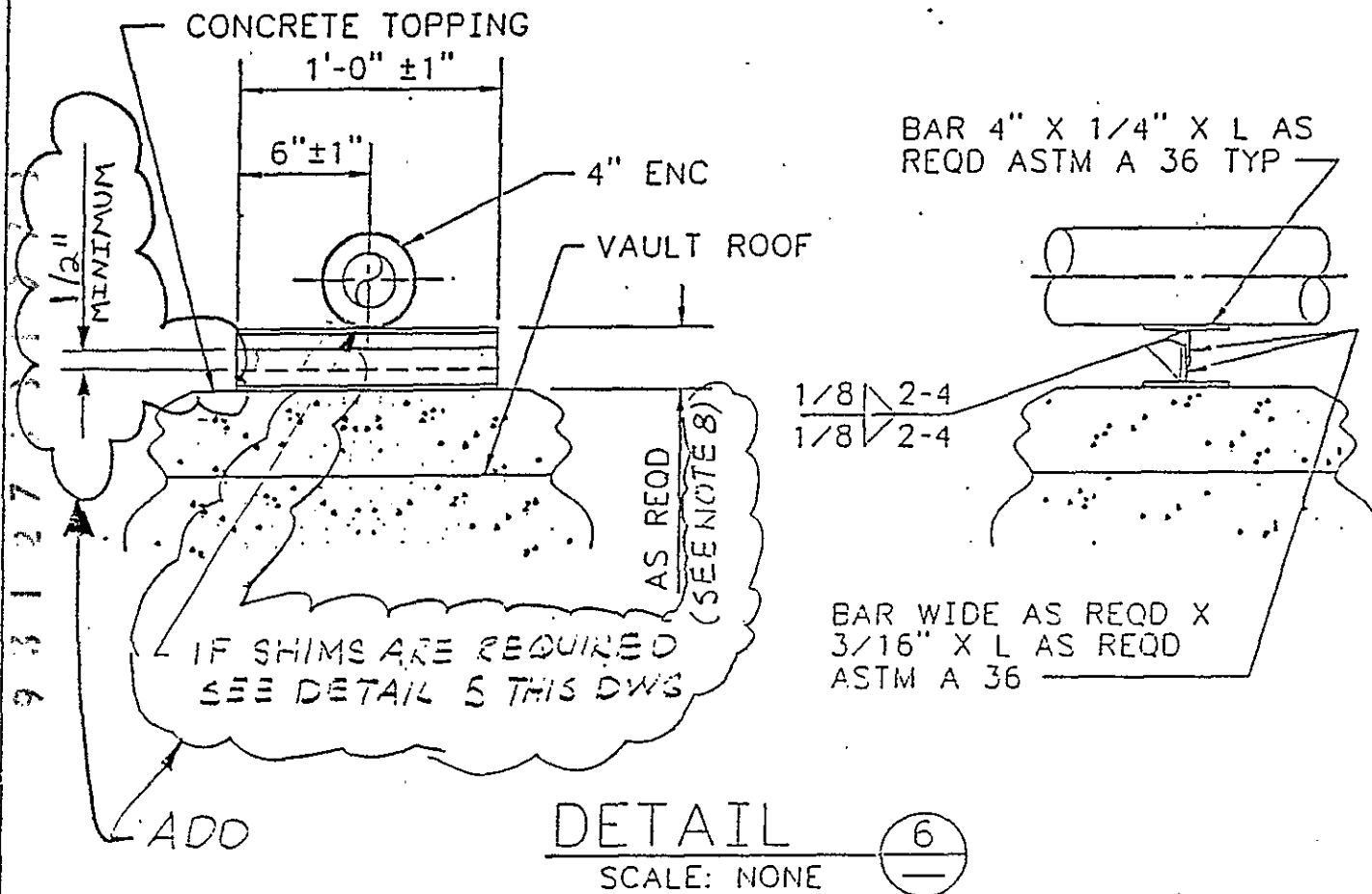
BEND ENDS OF FIRST  
SHIM OVER ON CONCRETE  
SUPPORTS OR CONCRETE  
BLOCKS ONLY

DETAIL

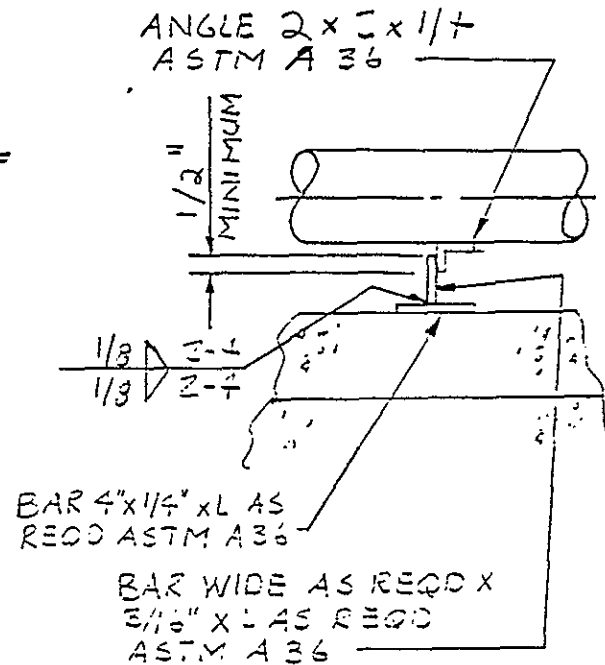
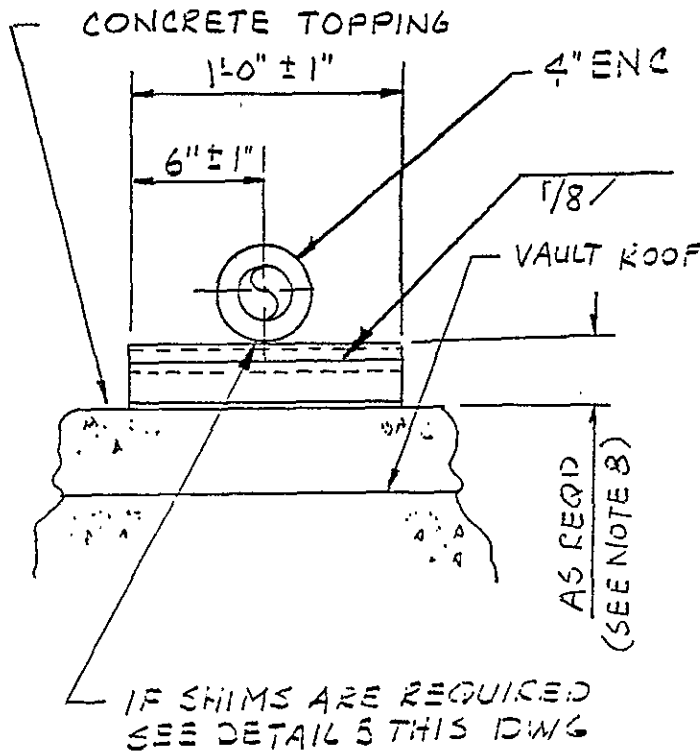
SCALE: NONE



Ref. Dwg.	Sh.	Rev.	Prepared By	Checked By	ECN No.	Page
H-2-77599	1	1	D. McDORMAN	M.A. McLean	B-714-122	6/8
H-2-78470	1	0				



Ref. Dwg.	Sh.	Rev.	Prepared By	Checked By	ECN No.	Page
H-2-77599	1	1	D. McDORMAN	M. R. McLean	B-714-122	7/8
H-2-78470	1	0				

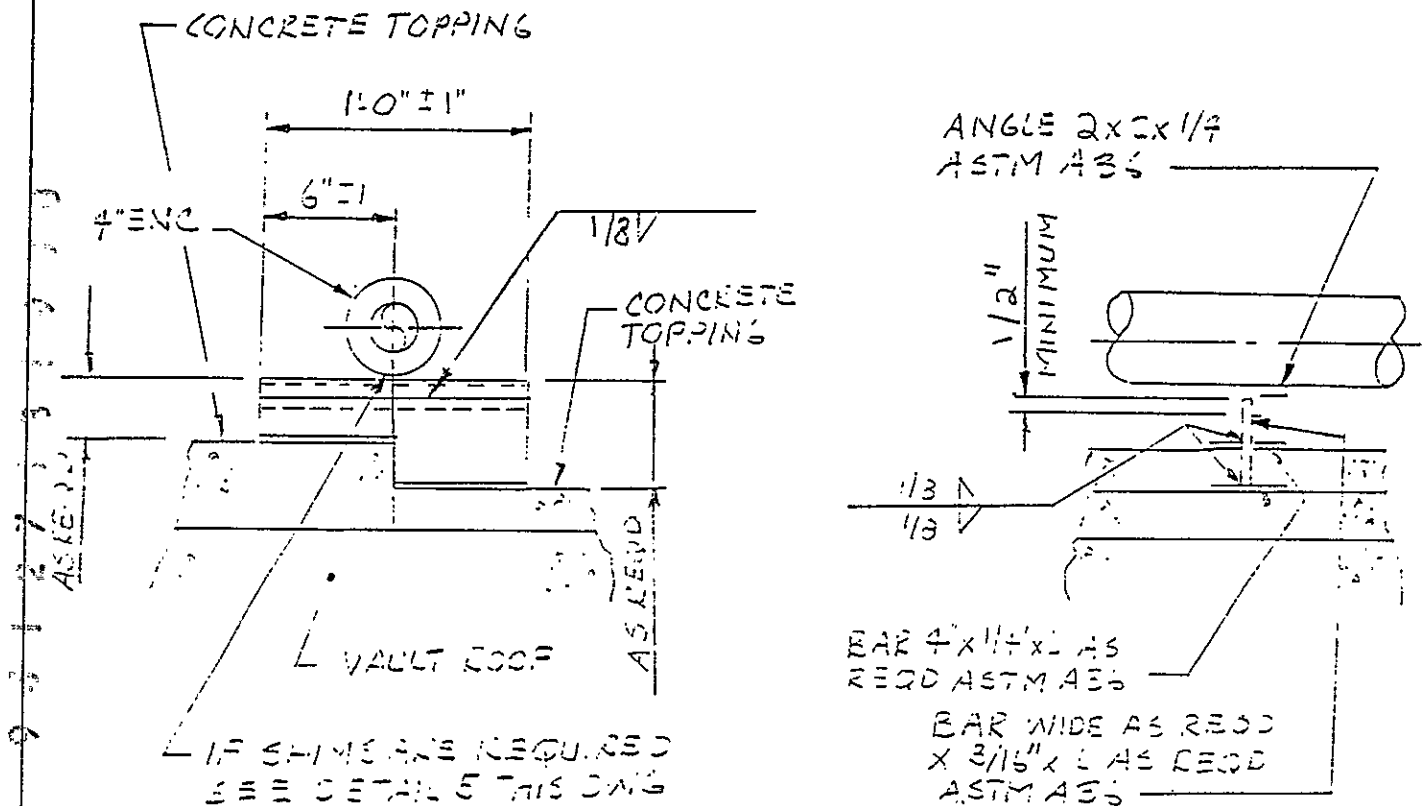


**DETAIL**

SCALE: NONE



Ref. Dwg.	Sh.	Rev.	Prepared By	Checked By	ECN No.	Page
H-2-77599	1	1	D McDORMAN	M. A. McLean	B-714-122	8/8
H-2-78470	1	0				



DETAIL -

SCALE: NONE

SEE NOTE 9

8  
1

TECHNICAL REVIEW  
OF THE  
DRAFT RESPONSES TO ECOLOGY'S COMMENTS  
ON THE  
PNL REPORT 7644 ON GAS GENERATION AND RELEASE  
FROM THE  
DOUBLE SHELL SLURRY FEED GROUT VAULTS

Presented to

State of Washington  
Department of Ecology  
Nuclear and Mixed Waste Management Program (NMWMP)  
Mail Stop No. PV-11  
Olympia, Washington 98504

Prepared by

Brown and Caldwell Consultants  
Hazardous Materials Management Program  
100 West Harrison Street  
Seattle, Washington 98119

March 15, 1992

DRAFT RESPONSES TO ECOLOGY'S COMMENTS TO PNL REPORT 7644,  
GAS GENERATION AND RELEASE FROM DOUBLE-SHELL  
SLURRY FEED (DSSF) GROUT VAULTS

Summary

1. Summary, Page iii, Paragraph 2

The response is not adequate. The proposed vents are not large enough to handle the proposed gas flow. There has been no analysis made or presented in this response of flame propagation speeds, or of lower or upper explosive limits for hydrogen (Refs. 1, 2, 3, 4, 5, 6). There is also no analysis presented of a possible dynamic gas flow system or of its impacts upon the above factors, or of possible soil contamination.

2. Summary, Page iii, Paragraph 3

The response is not adequate. There is again no analysis made or presented of possible flame propagation speeds in the tubes or of flammable gas mixtures in the grout vault bottoms or gravel interstices. The information on lower explosive limits (LELs), upper explosive limits (UELs), or flame propagation speeds of hydrogen gas mixtures is not presented, with either air, oxygen, or nitrous oxides. Similar information for any organic compounds which may be present in the gas stream is not presented. Any information on required flammable gas dilution factors to avoid explosion hazards is also not presented. The problem is analogous to digester and evaporator noncondensable gas handling systems in Kraft pulp and paper mills (Ref. 7, 8, 9, 10, 11, 12).

3. Summary, Page iii, Paragraph 4

The response is partially adequate. The fraction of organics in the gas stream is presented. No experimental data has been presented to substantiate the contentions raised. The potential extreme ranges in gas flow rates and compositions are also not presented. The amounts of organic materials are quite significant in any case in the waste and may be in the gas if volatile, hence the need to define volatilization and evaporation.

4. Summary, page iv, Paragraphs 1 and 2

The response is adequate with respect to radon and its daughter products. The response needs to be modified in that tritium releases are small, but would add to the soil contamination, where this subject is not addressed. The hydrogen gas volumetric flow rate, heat release rates, and fractionization content of tritium, deuterium, and hydrogen are not addressed.

5. Summary, Page iv, Paragraph 3

The response is not adequate as it reiterates the previous position. Again, no safety analysis has been made or presented in terms of lower explosive limits, upper explosive limits, or flame propagation speeds of hydrogen. There is also no analysis of the possible impacts of localized heat sources within the grout vaults (specifically cesium decay) on the creation of "hot spots" which might aggravate these conditions. The ranges of possible solutions are not fully identified, which include the following: (1) prevent hydrogen formation by upstream radionuclide removal; (2) remove the hydrogen gas from the vaults following its formation; (3) a combination of the above two alternatives (Ref. 13).

## Introduction

### 6. Introduction, Page 1, Paragraph 1

The response is not adequate. It does not address the potential explosion hazards resulting from the accumulation of hydrogen gas in the gravel interstices or bottom spaces of the grout vaults, or of the comparative abilities of the passive and dynamic gas flow system to prevent and/or dissipate these hazards.

### 7. Introduction, Page 1, Paragraph 2

The response is not adequate. The information requested for the respective waste streams has not been provided, even for the DSS/DSSF wastes. It is fair to limit the scope of the response to the DSS/DSSF wastes only, and not for other wastes. The possible need for waste pretreatment in order to selectively remove cesium and organics prior to grout pouring is not addressed in terms of its ability to prevent or retard hydrogen gas evolution from the vault contents.

### 8. Introduction, Page 1, Paragraph 2

The response is partially acceptable in that volatilization and evaporation are primarily semantically different in this instance. There is a need to quantitatively estimate to the extent possible with available data the nonradioactive and radioactive organic and inorganic compound emissions in this document, and not merely to state that it is a negligible problem which is referenced to a separate Air Permit Application.

## Gas Generation

### 9. Gas Yield, Page 2, Paragraph 1

The response is acceptable in that it identifies the potential emission and hydrogen gas reaction modes, and addresses the radon. However, the response does not present quantitative emission factors for Volatile Organic Compounds (VOCs). The degree of future tritium contamination of the soil needs to be minimized.

### 10. Gas Yield, Page 2, Paragraph 2

The response is adequate.

### 11. Gas Yield, Page 2, Paragraph 3

The response is partially acceptable. The assumption of the equivalence of beta and gamma radiation is finally clarified. It is, however, an assumption which has not been verified by the presentation of experimental data. The impact of possible reductions in cesium contents of the waste is not properly addressed, and needs to be, with respect to variations in radiolytic hydrogen generation.

### 12. Gas Yield, Page 2, Paragraph 4

The response is a reasonable and properly thorough response to the question raised. The question of whether the alternative estimates raised are sufficiently conservative really needs to be answered from actual experimental data. The definition of what constitutes an absolutely "worst case" condition certainly needs to be verified in the same way in terms of radiolytic hydrogen generation potential.



13. Gas Yield, Page 3, Paragraphs 2 and 3

The response is acceptable. The only information sources utilized in the previous review were the reviewed report, the listed references, the previous permit application, plus the author's knowledge of the general aspects of radiolytic chemistry and gas flow safety systems. Additional information needs to be developed based on actual experimental test data.

14. Gas Yield, Page 4, Paragraph 1

The response is adequate to the question raised to the extent that experimental data is available. The information utilized in the review came only from the reviewed report, the permit application (Ref. 14), the listed references, and the author's general knowledge of radiolytic chemistry and gas flow safety systems. Direct experimental data on radiolytic hydrogen generation should be utilized to the fullest extent to which it is available. The limitation of the discussion to DSS/DSSF waste streams is fully appropriate and highly advisable.

15. Gas Generation, Page 5, Table 1

The response is acceptable in that it indicates the maximum radiolytic hydrogen generation rates, and that further experimental test data would be very beneficial.

16. Dose Rate Determination, Page 4, Paragraph 2

The response is in answer to the questions raised, and provides a proper explanation. The requested material is certainly not a legal requirement, but it also certainly makes it much easier for the reader to get a more clear picture of the waste material composition entering the grout vault. It is understood that the DSS/DSSF wastes are the only ones covered in this document.

17. Gas Generation Rate, Page 5, Paragraph 1

The values listed were based on estimates from Tables 4 and 8 of the previous text. It was not clear as to whether or not alpha, beta, and gamma radiations were included. The attempt was made to define the absolute boundary worst case condition in the absence of experimental data, of which more needs to be developed and reported.

18. Hydrogen Migration Evaluation, Page 8, Paragraph 1

The response provides the information as to why variations occurred, which was not previously clear from the earlier report. It is suggested that a table be provided which clarifies any discrepancies.

19. Hydrogen Migration Evaluation, Page 8, Paragraph 2

The response provides a satisfactory answer to the questions raised. The real concern is that any errors made be on the side of safety and not of risk, with the growing public concern over radiolytic hydrogen release potential.

20. Hydrogen Migration Evaluation, Page 8, Paragraph 3

The response is satisfactory.

21. Hydrogen Barrier Diffusion, Page 9, Paragraph 1

The response is satisfactory.

22. Hydrogen Barrier Diffusion, Page 9, Paragraph 3

The response is satisfactory in that additional hydrogen diffusion tests are being conducted, which may provide results which will determine the potential needs for system modification or further gas treatment.

23. Hydrogen Vent Size, Page 10, Paragraph 3

The response is not fully satisfactory. It has been suggested that the grout vault undersystem be redesigned to remove the hydrogen from the gravel through enlarged ventilation tubes along with added condensation traps. The alternative is to provide a sufficient degree of grout feed pretreatment to reduce the levels of the cesium and other radionuclides to prevent the formation of any radiolytic hydrogen.

24. Vent Design Guidance, Page 12, Paragraph 2

The response is not satisfactory. There is no assurance that the proposed system of passive soil venting can alleviate the potential explosion hazards related to hydrogen flammability levels and flame propagation speeds. The alternatives should be considered of prior grout feed pretreatment and dynamic gas venting with treatment.

25. Potential Explosion Hazards, Page 13, Paragraph 1

The response is not satisfactory because it does not properly address the question of lower explosive limits or flame propagation speeds of hydrogen as potential hazards in the grout vaults. The alternatives should be considered of upstream grout waste feed pretreatment and dynamic gas stream venting, removal and treatment.

26. Radon Generation Release, Page 14, Paragraph 3

The response is satisfactory in terms of radon. It is noted that a dynamic gas venting, removal, and treatment system for hydrogen removal employing activated carbon adsorption for Volatile Organic Compounds (VOCs) will also remove the entrained radon gas, making the issue moot.

27. Radon Generation Release, Page 17, Paragraph 2

The response is acceptable in terms of radon gas generated as delineated in their Table 28.

28. Tritium Gas Release, Page 18, Paragraph 1

The response is acceptable in that it presents a thorough discussion of tritium release. A high unit man-rem price is presented for condensation, but the actual capital cost and operating costs are not listed.

29. Closure Cover Vents, Page 19, Paragraph 1

The response is not fully satisfactory. A dynamic gas removal system to alleviate potential hydrogen flammability concerns would probably require an intake vault cover vent or vents. It is therefore recommended that a dynamic gas venting system employing air pollution controls as listed would be superior to the passive gas venting system for the following reasons:

- a. It would alleviate in a positive way any potential radiolytic hydrogen explosion hazards from either flammable mixtures or flame propagation speeds.

- b. It would physically remove the hydrogen and organic contaminants from the vaults to prevent their accumulation in the soil.
- c. There is also the potential for future energy and material recovery and reuse.

30. Conclusions, Page 20

Part 1. The response is partially satisfactory. The number change statements are correct. A dynamic gas venting and removal system should be considered with downstream air pollution controls for particulate matter (HEPA filters), organic vapors (activated carbon adsorption), and hydrogen (selective membrane separation) plus heat and material recovery (Ref. 15).

Part 2. The response is at least partially satisfactory for the following reasons. The assumption is stated that beta and gamma emissions are the same. This assumption may or may not be valid. The organic constituents may or may not be a significant source of radiolytic hydrogen gas emissions from the grout vaults. It is noted that certain DSS/DSSF waste vaults may contain appreciable levels of organics, subject to further waste characterization studies being conducted.

It is suggested that further consideration be given to near-tank or in-tank organic removal by peroxide or ozone oxidation prior to grout pouring in these tanks to eliminate the organics problem in a positive way. It is also suggested that upstream radionuclide removal by near-tank or in-tank treatment be undertaken for those wastes having significant radionuclide levels.

One possible treatment sequence for the pretreatment of low level grout waste feeds is to employ a combination of ion exchange demineralization, to be followed by organic solvent and acid dissolution extraction for comprehensive removal of radioactive isotopes from low level waste streams which may have application to the present situation.

Part 3. The response is acceptable.

Part 4. The response is partially satisfactory because hydrogen gas pressure release is not the only criteria for design, although the statement made is correct. The alleviation of flammable mixture and flame propagation speed criteria for radiolytic hydrogen would favor a dynamic gas venting system over the proposed passive soil venting system.

Part 5. The response is acceptable.

Part 6. The criteria for tube diameters are to be based on having suitable structural integrity, sufficiently low headloss, and maintain a gas velocity above 10 feet per second, above the expected hydrogen flame propagation speed of approximately 6.5 feet per second.

Part 7. The response is partially satisfactory during the filling step but needs to address hydrogen flammability limits after filling of the vault in the gravel interstices and vault bottom spaces.

Part 8. The response is satisfactory. The point is made that an external dynamic gas venting treatment system will remove radon in addition to organics as a side benefit.

Part 9. The response is acceptable. The use of condensation, electrolysis, and selective membrane separation could facilitate energy

recovery through cogeneration plus material recovery, although it is by no means a legal requirement, merely an economic benefit.

Part 10. The response is partially acceptable. Grout feed pretreatment could reduce or even alleviate potential radiolytic hydrogen gas generation. Dynamic gas venting, removal and treatment could alleviate any hydrogen flammability concerns.

31. Recommended Tests, Page 22

This response is acceptable.

9 6 1 1 7 3 3 3 7

## REFERENCES

1. Weast, R.C., Astle, M.J., and Beyer, W.H., eds., CRC Handbook of Chemistry and Physics, 65th Edition, "Limits of Flammability." CRC Press, Inc., Boca Raton, Florida, 1984, p. D-126.
2. Lewis, B., and von Elbe, G., Combustion Flame and Explosions of Gases, Academic Press, Inc., New York, New York, 1951.
3. Perry, J.H., and Chilton, C.H., eds., Chemical Engineers' Handbook, 5th Edition, McGraw-Hill Book Company, New York, New York, 1973, p. 9-25.
4. Perry, J.H., and Chilton, C.H., eds., Chemical Engineers' Handbook, 3rd Edition, McGraw-Hill Book Company, New York, New York, 1951.
5. Johnson, A., and Auth, J., eds., Fuels and Combustion Handbook, McGraw Hill Book Company, New York, New York, 1951, p. 286.
6. Obert, E.F. Internal Combustion Engines, International Textbook Company, Scranton, Pennsylvania, 1958.
7. Ginodman, G.M., "Purification of Waste Streams from Sulfate Cellulose Manufacture," Bumazhnaya Promyshlennost (Paper Industry), Moscow, U.S.S.R. November-December 1947, Vol. 22, no. 7, pp. 16-22.
8. Coleman, A.A., "The Combustion of Noncondensable Blow and Refill Gases in the Lime Kiln," Tappi, October 1958, vol. 41, no. 10, pp. 166A-168A, October 1958.
9. DeHaas, G.G., and Hansen, G.A., "The Abatement of Kraft Mill Odors by Burning," Tappi, vol. 38, no. 12, pp. 732-738, December 1955.
10. Ghisoni, P., "Elimination of Odors in a Sulfate Pulp Mill," Tappi, vol. 37, no. 5, pp. 201-2-5, May 1955.
11. Blosser, R.O., and Cooper, H.B.H., "Current Practices in Thermal Oxidation of noncondensable Gases in the Draft Industry," Atmospheric Pollution Technical Bulletin No. 34, National Council of the Paper Industry for Air and Stream Improvement, Inc., New York, New York, November 1967.
12. Cooper, H.B.H., Edde, H., and Luthick, D.J., "Noncondensable Gas Treatment," ch. 4 in Environmental Pollution Control, Pulp and Paper Industry: Part I - Air, Technology Transfer, Report No. EPA-625/7-76-001, Prepared by EKONO Consulting Engineers, Bellevue, Washington for the U.S. Environmental Protection Agency, Washington, D.C., October 1976.
13. Cooper, H.B.H., "Meeting Summary of Grout Sub-Group in Hanford Tank Waste Redefinition Study," Pasco, Washington, December 4-6, 1991.
14. U.S. Department of Energy, Richland, Washington, "Dangerous Waste Permit Application of the Grout Treatment Facility at the Hanford Site," Report No. DOE/RL-88-27, 6 volumes, submitted to the Washington State Department of Ecology, Olympia, Washington, 1989.
15. Rorstad, T., and Vaiman, L., "Energy Recycling and Recovery through Hydrogen Extraction," Techna Pacific Corporation, Seattle, Washington, March 2, 1992.
16. Galbraith, C. and Fukuja, J., "The MCD System for Decontamination of Low Level Radioactive Wastes," AMICO Corporation, Port Orchard, Washington, March 1992.

## Part II

# Environmental Protection Agency

**40 CFR Parts 148, 260, 261, et al.**  
**Land Disposal Restrictions for Newly**  
**Listed Wastes and Contaminated Debris;**  
**Proposed Rule**

# ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 148, 260, 261, 262, 264, 265, 268, 270 and 271

[FRL-4014-1]

## Land Disposal Restrictions for Newly Listed Wastes and Contaminated Debris

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** The Environmental Protection Agency (EPA) today is proposing treatment standards under the land disposal restrictions (LDR) program for certain wastes listed after November 8, 1984, and is also proposing to revise treatment standards for debris contaminated with certain listed hazardous waste or debris that exhibits certain hazardous waste characteristics (hereinafter referred to as contaminated debris). EPA is also proposing several revisions to previously promulgated standards and requirements. Due to critical deadlines for this rulemaking, today's proposal does not reflect the decision in *Shell Oil Co. v. EPA*, No. 80-1532 (D.C. Cir. December 6, 1991), where the court found procedural defects in promulgation of the mixture and derived-from rules. EPA recognizes that the court's remand of these rules may affect this proposal and the final rule. EPA requests comment on the impact of that ruling on this proposal.

**DATES:** Comments on this proposed rule must be submitted on or before February 24, 1992. (Since the Agency has entered into a settlement agreement to promulgate this rule by May 1992, and the capacity variance for much contaminated debris ends on May 8, 1992, no extensions to the comment period will be granted.)

**ADDRESSES:** The public must send an original and two copies of their comments to EPA RCRA Docket Number F-91-CD2P-FFFFF, room 2427 (OS-305), 401 M Street SW., Washington, DC 20460. The docket is open from 9 a.m. to 4 p.m., Monday through Friday, except on Federal holidays. The public must make an appointment to review docket materials by calling (202) 475-9327. A maximum of 100 pages from the docket may be copied at no cost. Additional copies cost \$0.20 per page.

EPA is asking prospective commenters to voluntarily submit one additional copy of their comments on labeled personal computer diskettes in ASCII (TEXT) format or a word

processing format that can be converted to ASCII (TEXT). It is essential to specify on the disk label the word processing software and version/edition as well as the commenter's name. This will allow EPA to convert the comments into one of the word processing formats utilized by the Agency. Please use mailing envelopes designed to physically protect the submitted diskettes. EPA emphasizes that submission of comments on diskette is not mandatory, nor will it result in any advantage or disadvantage to any commenter. Rather, EPA is experimenting with this procedure solely as an attempt to expedite our internal review and response to comments. For further information on the submission of diskettes, contact the Waste Treatment Branch at the phone number listed below.

### FOR FURTHER INFORMATION CONTACT:

For general information, contact the RCRA Hotline at (800) 424-9346 (toll free) or (703) 920-9810 locally. For information on treatment standards for newly listed wastes or contaminated debris, contact the Waste Treatment Branch, Office of Solid Waste (OS-322W), U.S. Environmental Protection Agency, 401 M St., SW., Washington, DC 20460, (703) 308-8434. For information on capacity determinations or national capacity variances, contact the Capacity Programs Branch, Office of Solid Waste (OS-322W), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (703) 308-8440.

### SUPPLEMENTARY INFORMATION:

#### Outline

#### I. Background

- A. Summary of the Hazardous and Solid Waste Amendments of 1984.
- B. Pollution Prevention (Waste Minimization) Benefits.

#### II. Summary of Proposed Rule

- A. Newly Listed Wastes.
- B. Changes to Current Regulations.
- C. Contaminated Debris.

#### III. Detailed Discussion of Today's Proposed Rule: Newly Listed Wastes

- A. Recent Petroleum Refining Wastes (F037 and F038).
- B. Wastes from the Production of Unsymmetrical Dimethylhydrazine (K107-K110).
- C. Wastes from the Production and Dimethyltoluene and Toluenediamine (K111 and K112).
- D. Wastes from the Production of Ethylene Dibromide (K117, K118 and K138).
- E. Wastes from the Production of Ethylenebis(dithiocarbamic Acid (K123-K128).
- F. Wastes from the Production of Methyl Bromide (K131 and K132).
- G. Additional Organic U Wastes (U328, U353, and U359).

#### IV. Detailed Discussion of Today's Proposed Rule: Changes to Existing Regulations

- A. Proposed Revisions to the F001-F005 Spent Solvents Treatment Standards.
- B. Conversion of Wastewater Standards Based on Scrubber Water.
- C. Proposed Revisions to Treatment Standards for K061, F006, and K062.
- D. Inorganic Constituents to be Added to Appendix VIII. *p 977*
- E. Notification and Certification for Characteristic Wastes.
- F. Applicability of Part 268 for Certain Waste Mixtures No Longer Exhibiting a Characteristic.
- G. Storage and Treatment in Containment Buildings.
- V. Detailed Discussion of Today's Proposed Rule: Contaminated Debris *p 982*
  - A. Overview.
  - B. Definitions.
  - C. Contaminant Categories.
  - D. Determining Contaminants Subject to Treatment.
  - E. Exclusion of Contaminated Debris from Subtitle C.
  - F. Contaminated Debris Treatment Standards.
  - G. Regulation of Treatment Residuals. *p 991*
  - H. Other Provisions of the Rule.
  - I. Permits for Treatment Facilities.
  - J. Comments on the May 30, 1991 ANPRM.
- VI. Capacity Determinations *p 998*
  - A. Capacity Analysis Results Summary.
  - B. Petroleum Refining Wastes and Other Organic Wastes.
  - C. Required and Available Capacity for Newly Listed Wastes Mixed with Radioactive Contaminants.
  - D. Required and Available Capacity for Debris Contaminated with Newly Listed Wastes.
  - E. Capacity Determination for Underground Injected Wastes.
- VII. State Authority *p 1003*
  - A. Applicability of Rules in Authorized States.
  - B. Effect on State Authorization.
- VIII. Effect of Proposed Rule on Other Environmental Programs
  - A. Discharges Regulated Under the Clean Water Act.
  - B. Discharges Regulated Under the Marine Protection, Research, and Sanctuaries Act.
  - C. Groundwater Protection Principles.
  - D. Wellhead Protection Under the Safe Drinking Water Act (SDWA).
  - E. Air Emissions Regulated Under the Clean Air Act (CAA).
  - F. Clean Up Actions Under the Comprehensive Environmental Response, Compensation, and Liability Act.
  - G. Applicability of Treatment Standards to Wastes from Pesticides Regulated Under the Federal Insecticide, Fungicide, and Rodenticide Act.
  - H. Regulatory Overlap of Polychlorinated Biphenyls (PCBs), Under the Toxic Substances Control Act (TSCA) and RCRA.
  - I. Disposal of Asbestos Regulated Under TSCA.
- IX. Regulatory Requirements
  - A. Economic Impact Screening Analysis Pursuant to Executive Order 12291.

EPA to develop an analytical method to quantify 2-ethoxyethanol in wastewaters. This commenter submitted preliminary data from biological treatment of a wastewater high in 2-ethoxyethanol and encouraged EPA to develop numerical treatment standards for 2-ethoxyethanol. EPA is currently soliciting further information from this commenter.

#### IV. Detailed Discussion of Today's Proposed Rule: Changes to Existing Regulations

##### A. Proposed Revisions to the F001-F005 Spent Solvent Treatment Standards

**F001**—The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005 and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

**F002**—The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,1,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,2,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

**F003**—The following spent nonhalogenated solvents: Xylene acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent nonhalogenated solvents; and all spent solvent mixtures/blends containing before use, one or more of the above nonhalogenated solvents, and a total of 10 percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

**F004**—The following spent nonhalogenated solvents: Cresol and cresylic acid and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

**F005**—The following spent nonhalogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing before use, a total of 10 percent or more (by volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

The agency is, today, proposing revisions to the treatment standards for organic constituents in both the nonwastewater and wastewater forms of F001-F005 wastes. The Agency is soliciting comments on the proposed changes to the treatment standards as well as any treatment data that may be available to assist in further refinement of the treatment standards.

##### 1. Regulatory Background

**a. Listing definitions.** On May 19, 1980 (45 FR 33119), the Environmental Protection Agency (EPA) listed 27 commonly used organic solvents as hazardous wastes when spent or discarded. The solvents were listed as EPA Hazardous Waste Nos. F001, F002, F003, F004, and F005. These listed wastes included certain spent halogenated and nonhalogenated solvents, including still bottoms from the recovery of these solvents.

On December 31, 1985 (50 FR 53315), the Agency promulgated an amendment to the listings to include mixtures containing a total of 10 percent or more (by volume) of one or more of the listed solvents (the 10 percent threshold always applied to solvent mixtures before use). The Agency believed that establishing a threshold level well below the minimum solvent concentration typically used in solvent formulations would bring the majority of solvent mixtures used in commerce into the hazardous waste management system, while excluding dilute mixtures. Furthermore, data showed that, at concentrations above 10 percent, solvents have been demonstrated to cause substantial harm to human health. The Agency also received numerous comments regarding the scope to the spent solvent listings. As clarified in the December 31, 1985, Federal Register (50 FR 53315), the listings cover only those solvents that are used for their "solvent" properties, i.e., to solubilize (dissolve) or mobilize other constituents. Manufacturing process wastes where solvents were used as reactants or ingredients in the formulation of commercial chemical products are not covered by the listing.

The final definition of the spent solvents listing did not include four solvents that were added to the F001-F005 listing on February 25, 1986: Benzene, 2-ethoxyethanol, 2-nitropropane, and 1,1,2-trichloroethane (51 FR 40607).

**b. F001-F005 Treatment Standards.** The Agency promulgated treatment standards for F001-F005 spent solvent wastes on November 7, 1986 (51 FR 40593). Lab packs containing these solvents were also subject to these treatment standards. The Agency did not include treatment standards for commercial chemical products, manufacturing chemical intermediates, and off-specification commercial chemical products (U and P wastes) that corresponded to the F001-F005 listings. The rule also did not cover the four newly listed solvents in the F001-F005 listings: Benzene, 2-ethoxyethanol, 2-nitropropane, and 1,1,2-trichloroethane (51 FR 6537).

The Agency promulgated the TCLP (i.e., the leaching procedure itself, but not the characteristic) in the final rule specifically for evaluation of the solvent and dioxin-containing wastes. As stated in 53 FR 17584, EPA's land disposal restrictions for solvent waste codes F001-F005 (51 FR 40572) uses the TCLP value as a measure of performance. At the time that EPA promulgated the treatment standards for F001-F005, useful data were not available on total constituent concentrations in treated residuals, and as a result, the TCLP data were considered to be the best measure of performance.

However, for all organic constituents whose treatment standards have been promulgated after the November 7, 1986 rule, EPA has based the treatment standards on the total constituent concentration found in the treated waste. EPA has based its decision on the fact that these technologies exist to destroy the various organic compounds. Accordingly, the best measure of performance should reflect the extent to which the various organic compounds have been destroyed or the total amount of constituent remaining after treatment.

**c. Methylene chloride standard revised.** As part of the First Third rule, the Agency revised and promulgated the BDAT treatment standard for methylene chloride in F001-F005 wastewaters from the pharmaceutical industry (53 FR 31152). The revised treatment standard was based on the transfer of treatment data for wastewater from agricultural facilities. The revised treatment standard was based on steam stripping data for methylene chloride and was based on total constituent analysis.



d. *Amendment to F001-F005 listing definition.* In the Third Third rule (55 FR 22576), the Agency promulgated treatment standards for 1,1,2-trichloroethane, benzene, 2-ethoxyethanol, and 2-nitropropane for the F002 and F005 spent solvents. These four organic constituents were added as hazardous constituents to the F002 and F005 hazardous waste listings in 1986 (see 51 FR 6737, February 25, 1986). EPA did not amend treatment standards for the other solvent constituents in F002 and F005. The Agency promulgated concentration-based treatment standards for wastewater forms of 1,1,2-trichloroethane and benzene based on performance data generated from one, or a combination of two or more, of the following BDAT technologies: Biological treatment, steam stripping, carbon adsorption, and liquid extraction, among others. The treatment standards promulgated for 1,1,2-trichloroethane and benzene in nonwastewater forms of F002 and F005 were based on performance data from incineration. These treatment standards are expressed as concentration-based standards in the treated waste.

EPA had determined that the available data were insufficient to establish concentration-based treatment standards for wastewater and nonwastewater forms of F005 containing 2-nitropropane and 2-ethoxyethanol and instead promulgated methods of treatment as the treatment standards.

#### 2. Overlap Between F001-F005 Solvents and Other BDAT Standards

Many of the solvent constituents that are regulated in F001-F005 wastes are also regulated in the First, Second, and Third Third rules. In the April 18, 1988 and the May 17, 1988 proposed First Third rules, treatment standards for the following K wastes, containing solvent constituents also regulated in F001-F005 wastes, were proposed: K001, K015, K016, K018, K019, K020, K021, K022, K025, K030, K037, K048, K049, K050, K051, K052, K086, K087, K103, and K110. The treatment standards for these wastes were promulgated on August 17, 1988.

In the Second Third proposed rule, treatment standards for the following K wastes containing constituents that are also regulated in F001-F005 wastes were proposed: K011, K013, K014, K028, K029, K060, and K096. These treatment standards were promulgated on June 23, 1989.

In the November 22, 1989 proposed rule for the Third Third wastes, EPA proposed two alternative sets of concentration-based treatment standards for wastewater forms of the

majority of the U and P wastes, many of which were solvent constituents found in F001-F005 wastes. One set of treatment standards was based on the concentration of each constituent in incinerator scrubber water. The second set of standards was based on wastewater treatment performance data for each constituent. On the basis of comments received, the Agency established and promulgated treatment standards for wastewater forms of the Third Third waste codes based on wastewater treatment performance data. These treatment standards were promulgated on June 1, 1990 (55 FR 22601). The solvent wastes affected by this change included: Acetone (U002), n-butyl alcohol (U031), carbon disulfide (P022), carbon tetrachloride (U211), chlorobenzene (U037), cresols and cresylic acid (U052), cyclohexanone (U057), 1,2-dichlorobenzene, ethyl acetate (U112), ethylbenzene, ethyl ether (U117), isobutanol (U140), methanol, methylene chloride (U080), methyl ethyl ketone (U161), methyl isobutyl ketone (U161), nitrobenzene (U169), pyridine (U196), tetrachloroethylene (U210), toluene (U220), 1,1,1-trichloroethane (U226), 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethylene (U228), trichlorofluoromethane, and xylene (U239).

The Agency also proposed treatment standards for nonwastewater forms of U and P wastes on November 22, 1989. (The U wastes that contain constituents regulated in the F001-F005 final rule are the same as the Third Third U wastes discussed above.) After the comment period, the Agency revised the proposed treatment standards for approximately 75 constituents. These changes were based on three data sources: The Interlaboratory Ash Study, an in-house study by EPA's Office of Research and Development, and EPA's reevaluation of its own calculation and methodology. These changes took the form of either different numerical values for concentration-based standards or promulgating incineration as a method of treatment for wastes for which EPA had not proposed concentration-based standards. The nonwastewater concentration-based standards, promulgated on June 1, 1990, reflect the performance of well-designed and well-operated incineration systems and were developed primarily using the results from 14 incineration test burns (55 FR 22604).

Treatment standards for the following F and K wastes containing solvent constituents present in F001-F005 solvent wastes were also proposed and promulgated in the Third Third: F025, K001, K011, K013, K014, K015, K021,

K022, K025, K026, K029, K035, K037, K042, K048, K049, K050, K051, K060, K073, K083, K085, K086, K095, K096, and K105.

#### 3. Comments Received from the May 30, 1991, Advance Notice of Proposed Rulemaking on Revisions to Standards for F001-F005 Solvent Wastes

The Agency received a number of comments on the proposed rulemaking revisions to the F001-F005 solvent waste treatment standards that were outlined in the ANPR; all the comments were generally favorable to the idea of basing the nonwastewater treatment standards for organic constituents in F001-F005 spent solvents from the existing TCLP standards to standards based on total concentrations as an alternative to the existing TCLP standards.

#### 4. Proposed Changes to the F001-F005 Treatment Standards

The Agency is today proposing to revise the treatment standards for both nonwastewater and wastewater forms of F001-F005 wastes. (See Table at end of this section for specific treatment levels.) The methodology used to develop the treatment standards for both nonwastewater and wastewater forms of F039 (multisource leachate) was used in determining the revised treatment standards for the F001-F005 spent solvents. These revisions do not, however, include the four solvents that were added to the solvents listings: Benzene, 2-ethoxyethanol, 2-nitropropane, and 1,1,2-trichloroethane. Treatment standards for these constituents were promulgated in the Third Third final rule in accordance with the previously mentioned methodology.

In addition, the Agency is changing the measure of performance for F001-F005 solvents from treatment standards based on the TCLP to standards based on total concentration of organic constituent in the waste. This is appropriate in that EPA has previously determined that treatment technologies for organics exist to destroy the various organic compounds. Accordingly, the best measure of performance is the extent to which the various organic compounds have been destroyed or the total amount of constituent remaining after treatment.

a. *Revisions to the Standards for Cresols.* In the Solvents and Dioxins rule, the Agency promulgated BDAT treatment standards for "cresols." At that time, the Agency did not distinguish between the various isomers that are present in cresols. As a result, the Agency promulgated a concentration-

based treatment standard for cresol wastewaters of 2.82 mg/l based on the performance of activated carbon adsorption. For nonwastewaters, the Agency had no data on TCLP extracts of residues from the incineration of cresols (cresylic acid) to use in the derivation of the BDAT treatment standard. EPA, instead, used chemical structure as the basis for transferring the treatment data to cresols (cresylic acid) spent solvents. The data from which the treatment standard for incineration of methylethyl ketone was derived was transferred to cresols (cresylic acid). The treatment standard of 0.75 mg/l for nonwastewaters is based on the transferred data.

In the Third Third rule, EPA promulgated treatment standards for U052 waste. U052 is listed as "cresols (cresylic acid)." Cresylic acid is the name given to a mixture of three isomeric cresols (methyl phenols), in which the meta-cresol predominates. U052 typically contains various levels of ortho-cresol, metacresol, and para-cresol. Analytical methods are usually reported for o-cresol (CAS No. 95-48-7) and a combination of m- and p-cresols, because m-cresol and p-cresol cannot be distinguished by the analytical methods. Thus, the Agency promulgated concentration-based standards for U052 based on an analysis for o-cresol and the mixture of m-cresol and p-cresol.

Based on this, the Agency is today proposing to modify the current treatment standards for the constituent "cresols" in F001-F005 wastes. The Agency is proposing to transfer the treatment standards from U052 wastes for o-cresol and a mixture of m-cresol and p-cresol wastewaters and nonwastewaters to F001-F005 wastes based on total concentration of constituent(s) in the waste stream.

**b. Modification to the Regulatory Placement of F001-F005 Standards.** The Agency is also proposing to change the regulatory table as it pertains to F001-F005 wastes. The Agency has identified a placement error for F001-F005 spent solvent wastewaters. The regulated hazardous constituents in F001-F005 and their respective wastewater treatment standards are in Table CCWE—Constituent Concentrations in Waste Extract (40 CFR 268.4). However, this placement is in error; the correct location for these standards should be in Table CCW—Constituent Concentrations in Wastes (40 CFR 268.43). As such, the tables will be changed accordingly. Furthermore, in that the Agency is proposing to change the nonwastewater treatment standards from the TCLP standard to a total

concentration-based standards, this part of the table will also change (if the proposal is finalized) by placing the nonwastewater standards for F001-F005 spent solvents in Table CCW—Constituent Concentrations in Wastes.

#### PROPOSED REVISIONS TO TREATMENT STANDARDS FOR F001-F005 SPENT SOLVENT WASTES

Regulated constituent	Proposed treatment standard		
	Treatment	Wastewater (mg/l)	Non-wastewater (mg/kg)
Acetone.....	BT	0.28	160
n-Butyl alcohol...	BT	5.6	2.6
Carbon disulfide.	BT	0.014	NR
Carbon tetrachloride.	BT	0.057	5.6
Chlorobenzene...	BT	0.057	5.7
Cresol (m- and p- isomers).	AS	0.77	3.2
o-Cresol.....	BT	0.11	5.6
Cyclohexanone...	BT	0.36	NR
1,2-Dichlorobenzene.	BT	0.088	6.2
Ethyl acetate.....	AS	0.34	33
Ethyl benzene.....	BT	0.057	6.0
Ethyl ether.....	RO	0.12	160
Isobutyl alcohol...	BT	5.6	170
Methanol.....	BT	5.6	NR
Methylene chloride.	SS	0.089	33
Methyl ethyl ketone.	BT	0.28	36
Methyl isobutyl ketone.	BT	0.14	33
Nitrobenzene.....	SS+	0.068	14
	AC		
Pyridine.....	ANFF	0.014	16
Tetrachloroethylene.	SS	0.056	5.6
Toluene.....	SS	0.08	28
1,1,1-Trichloroethane.	SS	0.054	5.6
Trichloroethylene.	SS	0.054	5.6
1,1,2-Trichloro-1,2,2-trifluoroethane.	As + FR	0.057	28
Trichloromethane.	LL + SS	0.02	33
Trichloromethane.	+ AC		
Xylenes (total)....	WAO	0.32	28

<sup>1</sup> Wastewater treatment technologies on which the treatment standards were based are indicated in this column; all of the nonwastewater treatment standards were based on incineration.

<sup>2</sup> The methylene chloride treatment standard for wastewaters generated from pharmaceutical plants is 0.44 mg/l.

NR: Not regulated.

#### Key to Treatment Technologies

AC—Activated carbon; ANFF—Anaerobic fixed film biological treatment; AS—Activated sludge biological treatment; BT—Biological treatment; GAC—Granulated Activated Carbon; Fil—Filtration; LL—Liquid liquid extraction; PACT—Powdered Activated Carbon Treatment; RO—Reverse osmosis; SS—Steam stripping; WAO—Wet air oxidation.

#### B. Conversion of Wastewater Standards Based on Scrubber Water

K015—Still bottoms from the distillation of benzyl chloride.

K016—Heavy ends or distillation residues from the production of carbon tetrachloride.

K018—Heavy ends from the fractionation column in ethyl chloride production.

K019—Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.

K020—Heavy ends from the distillation of vinyl chloride in vinyl chloride production.

K023—Distillation light ends from the production of phthalic anhydride from naphthalene.

K024—Distillation bottom tars from the production of phthalic anhydride from naphthalene.

K028—Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.

K030—Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.

K048—Dissolved air flotation (DAF) float from the petroleum refining industry.

K049—Slop oil emulsion solids from the petroleum refining industry.

K050—Heat exchanger bundle cleaning sludge from the petroleum refining industry.

K051—API separator sludge from the petroleum refining industry.

K052—Tank bottoms (lead) from the petroleum refining industry.

K087—Decanter tank tar sludge from coking operations.

K093—Distillation light ends from the production of phthalic anhydride from ortho-xylene.

K094—Distillation bottoms from the production of phthalic anhydride from ortho-xylene.

U028—Bis (2-ethylhexyl) phthalate.

U069—Di-n-butyl phthalate.

U088—Diethyl phthalate.

U102—Dimethyl phthalate.

U107—Di-n-octyl phthalate.

U190—Phthalic anhydride (measured as phthalic acid).

On November 22, 1989 (54 FR 48372), EPA proposed as part of the Third Third rule concentration-based treatment standards for numerous listed wastes based on the performance of incineration. For the wastewaters, the treatment standards were based on the concentration of the constituents of concern in incineration scrubber waters. In the final rule (55 FR 22520), however, EPA altered its approach to setting these standards and promulgated treatment standards for wastewaters based on actual wastewater treatment data for the constituents of concern. This change was adopted for a number of reasons.

First, it was stated in the final rule for the Second Third wastes (54 FR 26629) and reiterated in the final rule for Third Third wastes (55 FR 22577) that, when the Agency had appropriate wastewater treatment data from well-designed and well-operated wastewater treatment

The regulations specify control requirements for most asbestos emissions, including work practices to be followed to minimize the release of asbestos fibers during handling of asbestos waste materials. These regulations do not identify a safe threshold level for airborne asbestos fibers.

The OSHA regulations are established to protect workers handling asbestos or asbestos-containing products. The current OSHA regulations include a maximum workplace airborne asbestos concentration limit of 0.2 fibers/cc on an 8-hour time weighted average basis, and a ceiling limit of 10 fibers/cc in any 15-minute period. The standards include requirements for respiratory protection and other safety equipment, and work practices to reduce indoor dust levels. See 29 CFR part 1910.

The transport and disposal of asbestos is regulated by TSCA under 40 CFR part 763, subpart E, appendix E, and by NESHAPs under 40 CFR part 61, subpart M. The NESHAP requirements for asbestos disposal begin at the point of removal. The asbestos material must be wet when removed and should be kept wet through the final disposal. A surfactant must be used in wetting of the asbestos. If an asbestos waste is removed dry, it must be wetted after removal until it is collected and sealed in leak-tight containers while wet. The recommended container is a leak-tight 6 millimeter thick plastic bag. The void space or air should be minimized prior to sealing the bag. Double bagging, plastic lined cardboard, or plastic-lined metal containers are considered to provide better containerization. Slurries of asbestos waste can be contained in leak tight drums if they are too heavy for plastic bags. Both EPA and OSHA specify that the containers be tagged with a warning label, e.g., Caution: Contains Asbestos Fibers. Avoid Creating Dust. May Cause Serious Bodily Harm.

An alternative handling method for wet asbestos waste is to use a vacuum truck. The slurry is transported in the vacuum truck to the disposal site. Air from the vacuum intake is dried and filtered through High Efficiency Particulate Air (HEPA) filter.

Improperly containerized waste is a violation of NESHAPs and the EPA should be notified. As a form of recordkeeping, a "cradle-to-grave" system is established under TSCA by a chain-of-custody form.

At the disposal site, EPA requires either no visible emissions to the air or the minimization of emissions by covering the containerized waste within 24 hours of receipt with at least 6 inches

of a non-asbestos material or an approved dust suppressing agent. It is recommended that the landfill operator have a separate area for asbestos disposal. The final closure of an area containing asbestos requires a cover of an additional 30 inches of compacted non-asbestos material to provide a 36 inch final cover. Other disposal site requirements include the control of public access by the use of approved warning signs and, if necessary physical barriers. Any variation to the disposal methods must receive prior approval by the Administrator.

b. *Treatment standards.* The single largest use of asbestos in the U.S. is in building products. Given the tremendous versatility of asbestos-containing material used in these products, EPA believes that a significant portion of asbestos debris will be generated through building renovation and demolition. EPA also believes that some of this debris may be contaminated with a prohibited listed waste (or may exhibit a prohibited characteristic) either as initially generated or after improper land disposal subject to Superfund or Corrective Action. Thus, asbestos debris could be contaminated debris subject to today's proposal rule (e.g., chromium-contaminated asbestos pipe and equipment insulation). Given that asbestos debris is not included in the six categories of debris for which we are today proposing treatment technologies in Table 1 of § 268.45, we specifically request comment on adding required treatment technologies for asbestos debris to Table 1.

Although it may be technically feasible to treat contaminated asbestos debris (or a debris mixture containing asbestos) using many of the 18 debris treatment technologies discussed in previous sections, many of the treatment technologies are not practicable for asbestos debris because of the potential for occupational exposure or environmental release of asbestos. In particular, based on engineering judgment, EPA believes that the following debris treatment technologies, while perhaps technically feasible in some situations, are not practicable for asbestos treatment because of the potential for occupational or environmental exposure (i.e., controls under OSHA, NESHAPs, and TSCA could not reasonably be met): Abrasive blasting, electropolishing, scarification and grinding, spalling, thermal desorption, vibratory finishing, thermal destruction (except vitrification), microencapsulation, and sealing.

On the other hand, EPA believes that the following technologies will be effective in treating specific

contaminants present in or on asbestos debris, but would probably require the use of filtration devices to control air or wastewater emissions containing asbestos to prevent occupational and environmental exposure in compliance with applicable controls under OSHA, NESHAPs, and TSCA: Acid washing; liquid phase solvent extraction; vapor phase solvent extraction; water washing and spraying; biodegradation; chemical oxidation; chemical reduction; photochemical treatment; and microencapsulation.

Accordingly, we have evaluated these nine technologies that may be applied to asbestos debris in compliance with applicable controls under OSHA, NESHAPs, and TSCA to identify those contaminant categories that they could effectively treat. See Appendix II of this preamble. The Agency specifically requests comment on the applicability of these technologies to asbestos debris and whether effective treatment would be ensured for the contaminant categories identified in appendix II when the technology performs according to the requirements of proposed Appendix IX to the rule.<sup>32</sup>

#### 4. Special Requirements for Radioactive Debris

a. *Definition of mixed wastes.* Mixed wastes are those wastes that satisfy the definition of radioactive waste subject to the Atomic Energy Act (AEA) and also contain a RCRA listed hazardous waste or exhibit a hazardous characteristic. On July 3, 1986 (51 FR 4505), EPA determined that the hazardous waste portions of mixed waste are subject to RCRA regulation.

The majority of mixed wastes can be divided into three categories based on the radioactive component of the waste: (1) Low-level wastes, (2) transuranic (TRU) wastes, and (3) high-level wastes. Low-level wastes include radioactive waste that is not classified as spent fuel from commercial nuclear power plants, or that is not defense high-level radioactive waste from producing weapons. TRU wastes are those wastes containing elements with atomic numbers greater than 92, the atomic number of uranium. High-level radioactive wastes are defined as spent fuel from commercial nuclear power plants, and defense high-level radioactive waste from the production of weapons.

b. *RCRA Requirements.* On June 1, 1990 (55 FR 22520), EPA promulgated

<sup>32</sup> Residues from the treatment of asbestos debris would be subject to the F039 standards as proposed for residues from treatment of any other debris.

treatment standards for four treatability groups of mixed waste: (1) Specific high level wastes, (2) D008 radioactive lead solids, (3) mixed waste containing elemental mercury, and (4) mercury containing hydraulic oil contaminated with radioactive materials. The Agency further asserted that "all promulgated treatment standards for RCRA listed and characteristic wastes apply to the RCRA hazardous portion of mixed radioactive (high-level, TRU, and low-level) wastes, unless EPA has specifically established a treatability group for that specific category of mixed waste."

However, there are a number of potential problems presented by applying the existing land disposal restriction standards to mixed waste contaminated debris, including the achievability of the existing standard and the consistency of these standards with AEA regulations. For instance, the specified technology to be used for mixed waste containing elemental mercury is "Amalgamation with Zinc as a Method of Treatment." This technology effectively reduces the leachability of liquid mercury. However, this technology may not effectively reduce the leachability of mercury contained in the pores of wood or cloth debris.

Also, incineration of mixed wastes containing radioisotopes of carbon and hydrogen would result in the spread of these isotopes through uncontrolled emissions of carbon dioxide and water vapor. This could result in an increase of the radiation hazard, which would conflict with the requirements of AEA.

The Agency is today proposing that mixed waste contaminated debris be required to comply with the treatment standards for contaminated debris (in addition to any regulation of that material under AEA), rather than to the treatment standards for the contaminating waste. This includes debris contaminated with mixed waste for which special treatability groups have been established (as discussed above) will be subject to debris standards rather than to the specified treatability group standards.

The exception would be the D008 radioactive lead treatability group, which would be subject to both debris standards and the treatability group standards when contamination includes other hazardous waste in addition to D008. EPA views that debris which is also in the radioactive lead treatability group to be similar to inherently hazardous debris, and is thus proposing a similar approach. We note further that application of both the D008 lead solids standard and the applicable debris

standard would not conflict with the existing D008 lead solids standard unlike the existing standards for mixed waste, as noted above. Further, application of both standards would also address the hazardous associated with D008 as well as any other hazardous wastes present on the debris.

##### 5. Sham Contamination of Debris

a. *Sham contamination.* Sham contamination of debris is the deliberate addition of a hazardous waste to debris to avoid compliance with the LDR standards for that hazardous waste. When a rule is promulgated that defers or excludes certain solid wastes from regulation, the ability to differentiate whether the addition of hazardous waste is a sham situation or a legitimate situation is always an issue. The Agency believes, however, that there is little incentive to deliberately contaminate debris to avoid compliance with the treatment standards because the debris would still have to be treated prior to land disposal and any residual generated from the treatment would still have to meet the F039 treatment standards.

The Agency considered requiring generators to certify that debris had been contaminated inadvertently and not as a result of deliberate action to avoid compliance with the LDRs. However, the Agency felt it would be difficult to require such certification, particularly at sites where the source of the original contamination is unknown, and it would be difficult to manage from an enforcement perspective.

b. *Impermissible dilution.* The Agency also considered whether deliberate contamination of debris is likely to occur followed by impermissible dilution of the contaminant to avoid compliance with the debris treatment standards. However, the Agency feels that existing regulations on permissible and impermissible dilution are quite specific as to when they apply. Current regulations (40 CFR 268.3(a) and (b)) specify when dilution is a permissible or impermissible treatment process.

The rules on dilution and the Agency's interpretive statements regarding those rules indicate that the dilution prohibition has a two-fold objective: (1) To ensure that prohibited wastes are actually treated; and (2) to ensure that prohibited wastes are treated by methods that are appropriate for that type of waste. EPA has indicated that prohibited wastes which are aggregated are normally not diluted impermissible if they are treated legitimately (i.e., subject to effective treatment, 55 FR 22666) in centralized treatment systems, irrespective of the dilution inherent in

such a system. Thus, if dilution is a legitimate type of treatment, or a necessary pretreatment step in a legitimate treatment system, such dilution is permissible.

EPA is proposing that in the case of debris that is ignitable or reactive, but nontoxic (i.e., it is not contaminated with a prohibited listed waste and does not exhibit EP toxicity), any type of deactivation would be a permissible means of removing the characteristic property. However, the Agency is soliciting comment on treating "contaminants subject to treatment" in characteristic debris, and were EPA to adopt such an approach, dilution prohibitions would probably apply due to concern for adequate treatment of toxics. 55 FR 22657, 22665-66. For toxic debris, including reactive cyanide debris that must be treated for cyanide, dilution in lieu of the prescribed method of treatment or to reach contained-in levels is impermissible since such dilution would occur for purposes of evading the treatment standards. See § 268.3. Since no wastewater treatment is involved (i.e. debris is a solid, not a liquid), the Agency need not balance any of the difficult issues relating to relationship of the RCRA prohibition and Clean Water Act subtitle D treatment impoundments receiving diluted non-hazardous, formerly characteristic wastewaters. See 55 FR at 22656-58. Centralized treatment of contaminated debris would be allowed under the proposal, of course, so that aggregation of debris amenable to the same type of treatment is permissible under the proposal.

##### 6. Sampling and Analysis

Sampling and analysis of contaminated debris would not be required to comply with the proposed treatment standards. Nonetheless, the Agency is considering developing implementation assistance regarding sampling and analysis techniques for debris because it will: (1) Facilitate the actions at Superfund sites of the on-scene coordinators (OSCs) and remedial project managers (RPMs); and (2) assist the Agency and generators and treatment facility operators in determining whether debris exhibits the toxicity characteristic or whether debris contaminated with a prohibited listed waste is contaminated with detectable levels of appendix VIII, part 261, constituents.

The Agency considered requiring sampling and analysis of treated debris to demonstrate that the treatment technologies effectively treated the toxic contaminants. Sampling would

Distribution:

E.J. Bitten WHC (L4-73)  
R.M. Carosino RL (A4-52)  
C.E. Clark RL (A5-15)  
M.W. Cline WHC (R1-48)  
M. Dev RL (A6-80)  
L.P. Diediker WHC (T1-30)  
D.L. Duncan EPA (~~HW-124~~) (HW-106)  
J.L. Epstein WHC (R4-01)  
C.J. Geier WHC (B2-19)  
D.W. Hendrickson WHC (R1-48)  
J.S. Hill WHC (H4-57)  
G.W. Jackson WHC (R4-01)  
M. Jaraysi Ecology  
D.A. Jones WHC (H4-16)  
R.T. Kimura WHC (S4-43)  
K.S. McCullough WHC (N1-83)  
T.M. Michelena Ecology  
S.M. Price WHC (H4-57)  
S.H. Rifaey WHC (R4-02)  
S.H. Sanan WHC (R4-05)  
T.W. Staehr WHC (R3-27)  
J.E. Van Beek WHC (R3-27)  
J.A. Voogd WHC (R4-03)  
J.L. Waite WHC (B2-35)  
G.F. Williamson WHC (R4-01)  
J.J. Witczak Ecology  
G.D. Wright WHC (R3-09)

GSSC RCRA UMM File, A4-35

ADMINISTRATIVE RECORD (Grout Treatment Facility, TD-2-1)  
[Care of EDMC, WHC (H4-22)]

Washington State Department of Ecology, Nuclear And Mixed Waste Library, Mail  
Stop PV-11

Environmental Protection Agency Region 10, Seattle, WA, Mail Stop HW-124

Please send comments on distribution list to Joe King (A4-35), 376-4726